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**HIGH-LEVEL GOVERNMENT-DESIGNATED  
EXPERT MEETING OF THE PROPOSED  
NORTHEAST PACIFIC REGIONAL  
SEAS PROGRAMME**

Third session  
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**PLAN OF ACTION FOR THE PROTECTION AND SUSTAINABLE DEVELOPMENT OF THE  
MARINE AND COASTAL ENVIRONMENT OF THE NORTH-EAST PACIFIC**

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## Preface

From 29 to 31 March 1996, the Government of Panama hosted a meeting of an ad hoc group of experts with the aim of examining possible mechanisms for the elaboration or adjustment of a plan for addressing the Central American Pacific region. At that meeting the experts designated by the Governments of Central American countries agreed on the imperative need to establish a regional plan of action for the north-east Pacific with the assistance of the United Nations Environment Programme (UNEP).

Subsequently, at its nineteenth session, the Governing Council of UNEP requested the Executive Director, within the context of the UNEP regional seas programme, and taking account of the Global Programme of Action for the Protection of the Marine Environment from Land-based Activities,<sup>1</sup> to assist the Governments of the north-east Pacific in negotiating a regional agreement for the development and implementation of a plan of action for the protection and sustainable development of the marine and coastal environment of the north-east Pacific (decision 19/14, of 7 February 1997).

At its twentieth session, in decision 20/20 of 4 February 1999, the UNEP Governing Council endorsed the action taken in facilitating the establishment of a proposed regional seas programme for the north-east Pacific, and took note of the wide support by the Governments concerned. The Council also invited the Governments of Costa Rica, El Salvador, Guatemala, Honduras, Mexico, Nicaragua and Panama to endorse the proposed meeting of high-level government-designated experts to review the proposals for a regional framework convention and plan of action for the protection and sustainable development of the marine and coastal environment of the north-east Pacific region. The Government of Panama kindly offered to host this meeting in 2000.

The draft of the plan was presented at the second session of the meeting of high-level government-designated experts for the proposed north-east Pacific regional seas programme (UNEP(DEC)/NEP/EM.1/3/Rev.1), held in Managua, Nicaragua, from 19 to 23 March 2001, which agreed to incorporate as a component of the plan the work programme modified by that meeting for the period 2001-2006 and requested UNEP to prepare a strategy which would incorporate the components of the plan as an integral part of the plan document.

The present plan of action constitutes a framework and coordinating mechanism for regional cooperation to facilitate and promote the sustainable management of the marine and coastal resources of the countries of the north-east Pacific, on the basis of joint policies and measures agreed and drawn up in response to national needs and interests of regional and global importance and for the well-being of present and future generations within the region. In its turn, the programme of activities also forms part, where appropriate, of the north-east Pacific regional component of the Global Programme of Action for the Protection of the Marine Environment from Land-based Activities. The plan represents the principal instrument for the implementation of the convention.

The geographical area encompassed by the plan of action includes the area covered by the Convention on the Protection and Sustainable Development of the Marine and Coastal Area of the North-East Pacific. This in turn corresponds, where appropriate, to the area of application of the north-east Pacific regional component of the Global Programme of Action for the Protection of the Marine Environment from Land-based Activities. Other States outside the region which have an interest in the plan of action will be able to participate in the plan or its activities, in accordance with the plan's coordinating mechanism.

The elements and activities which form the basis of the present plan of action are derived from the documents listed in annex I, and also from current international treaties pertinent to the implementation of the plan of action and the agreements, conclusions and recommendations arising from the meetings that formed part of the preparatory process.

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<sup>1</sup> UNEP(OCA)/LBA/IG.2/7.

## I. INTRODUCTION

1. The proposed north-east Pacific regional seas programme spans the area between the extreme south of the Pacific seaboard of Colombia, where it borders Ecuador, to the extreme north of Mexico on the Pacific, at its border with the United States, dominated in the north and centre by the California Current, in the southern reaches by the Equatorial Counter-Current and in the far south by the Humboldt Current. The region comprises what is known as the Great Marine Ecosystem of the California Current.

2. The north-east Pacific is notable in that it represents all the known tropical and subtropical environments and also for its wealth of biological diversity. It also offers important coastal outcrops characterized by a high level of biological productivity which supports a thriving fishing industry with many commercially important varieties of fish common to the whole region, such as several varieties of tuna and red snapper. This region accounts for between 35 and 42 per cent of the commercial species in the maritime fisheries of the countries in it, and between 60 and 80 per cent of all their fishing activities. Throughout the region coastal fishing is very important both economically and socially, and in some coastal communities it is the only economic activity and the sole source of food. As with industrial fishing, which takes place in open waters, both activities raise problems of overuse of resources, deterioration of the habitat and pollution. The plan of action can help draw up long-term measures to help support sustainable fishing activities by following a preventative approach and the use of management measures incorporating the ecosystem approach.

3. Mangrove forests, rich in biological diversity and productivity, extend from Mexico to Colombia. Mangroves are the coastal ecosystem best represented in the region, and account for approximately 9.6 per cent of the world's total mangrove stands and 17 per cent of the mangrove forests of Latin America, with a range of species common to the region. In some countries of the north-east Pacific, as much as 90 per cent of the total fish harvest depends on mangroves, and practically all the coastal aquaculture, especially marine shrimp farming, is carried out entirely in mangrove areas. Mangroves are associated with wetlands. Of 11 coastal wetlands in Central America and Mexico which are recognized as being of international importance, 10 are found in the north-east Pacific region; all the coastal wetlands of the region harbour mangroves and a wide variety of wildlife. Although there are no very extensive coral reefs in this region, there are still some coral beds in Colombia, Costa Rica,<sup>2</sup> Mexico and Panama. The coral occurs in discontinuous form, in patches and in larger formations, from the island of Gorgona in Colombia to the Gulf of California in Mexico, which represents the northern extremity of this subtropical coral fauna. Sedimentation is seriously affecting this important ecosystem. For its part, the mangrove is the most threatened coastal ecosystem in the region, with a reduction in its surface area over the last 20 years of between 40 and 60 per cent, mostly caused by reclamation for the development of aquaculture and for urban expansion. The regional action plan could help reverse this process through coordination and support for recovery activities and the management of activities which affect these ecosystems with a focus on sustainable development.

4. The region is a veritable mosaic of landscapes as a result of its varied ecosystem, and this has been partly responsible for the development of a large tourist industry which is now rapidly growing and contributes approximately 3.0 per cent of the region's gross domestic product (GDP). Some of its countries are internationally recognized tourist destinations. Tourism in the region represents an annual market of several million dollars, and in some countries it is one of the main sources of foreign currency. Between 40 and 60 per cent of tourism in the region is directed at marine and coastal areas, and part of this involves visits to national parks and other protected areas. Some coastal areas with great tourism potential are being affected by other developments that are not properly managed or are badly planned, while in other areas investments in infrastructure for tourism are being threatened by pollution, which represents an important economic risk. The regional plan of action could help anticipate many of the problems that these developments would cause and, at the same time, could draw up measures that would enable development to be made compatible with the environmental characteristics of the areas in question.

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<sup>2</sup> World Conservation Monitoring Centre, compilation, *Global Biodiversity: Status of the Earth's Living Resources*, Chapman and Hall, London, 1992, pp. 307-308, 313, 315 and 324-325.

5. Apart from their immensely varied ecosystems and rich biological diversity, many of the coastal and marine ecosystems of the region are experiencing intense degradation. Not just the mangroves but the estuaries, inlets and coastal lagoons and other related ecosystems are in the process of being changed, especially by sedimentation due to the intensive deforestation occurring in the countries of the region, which, combined with inappropriate agricultural practices, causes permanent erosion, producing a substantial sediment load which reaches the coastal areas through the rivers which drain into the sea. The massive quantity of sediments transported by the rivers has led to an increase in the extent and severity of floods because of the loss of water channels and the shrinking of river beds and a heavy influx of contaminants into soils that have been deprived of plant cover together with a massive build-up of sediments in river mouths. In the 1980s the annual average rate of deforestation reached 2,000 hectares per annum, with annual average losses of between 0.9 per cent and 3.2 per cent. The changes in catchment areas connected with coastal areas is a problem common to all the countries of the region. The regional plan of action can contribute to and support the formulation and implementation of plans, projects and programmes aimed at reducing the physical alterations and habitat losses caused by sedimentation, through basin management and other relevant measures.

6. In the mid-1990s, 12.7 per cent of the region's territory was given up to agriculture, the basis of the economy of most countries within the region, accounting for around 20 per cent of GDP and providing employment for more than a quarter of the economically active population. Agricultural products account for approximately 27 per cent of exports. With few exceptions, the majority of the farming areas given up to the production of export crops are situated in the coastal valleys of the Pacific. Farming is also characterized by crops which are dependent on agricultural inputs, in particular pesticides and fertilizers, and in some cases crops with poor soil retention. The pesticides used have toxicity levels between moderate and high, and in some areas there is overuse of these chemicals. Agriculture is the principal source of pesticide pollution in the region, and virtually all the rivers flowing out of farming valleys show evidence of pesticide pollution, which tends to accumulate in river mouths and downstream areas. The plan of action can help reduce this pollution source through support for enhancing the regional capacity to evaluate and monitor these substances and for introducing, among other things, environmentally sound and sustainable agricultural practices.

7. The region is rich in water resources, which are unequally distributed within the region and among the different countries, with an estimated volume of available freshwater of 2,091 km<sup>3</sup> and offtake rates varying between 41 per cent and 1 per cent for domestic use, between 2 per cent and 4 per cent for industrial use and between 89 per cent and 43 per cent for agricultural use. A large proportion of the water used is returned into the environment having been polluted from different sources. As a result of the discharge of pollutants, most of the water bodies in the region shows concentrations, at various levels, of pollutants. The presence of pesticides, heavy metals, nutrients and pathogenic micro-organisms has been noted. Around 95-97 per cent of the pollution that reaches the north-east Pacific does so through the rivers, and they carry the majority of the toxins that contaminate the sea. 98 per cent of the discharge of pollutants into freshwater sources is carried out directly through the sewerage systems, which account for about 90 per cent of the fixed sources of pollution and display the common feature of being released without being treated and/or, in a few cases, after limited treatment. As a consequence of these discharges and of agricultural drainage, large catchment areas are affected at a level of pollution categorized as "serious", together with their adjacent coastal areas. The plan of action could help by strengthening regional capacity for reducing these sources of pollution, giving support to the development of long-term pollution research and monitoring and developing specific guidelines and the creation and strengthening of capacity through specific training at appropriate levels.

8. A common factor in the north-east Pacific is that its coastal waters form a major route for maritime transport from Alaska to Panama. Much of the shipping travelling from the Pacific coast of North America and Central America to the Atlantic basin and other areas to the east travels through the Panama Canal. For example, much of the oil from Alaska destined for the east coast of the United States is transported via Panama through the Canal or from the Bahía de Charco Azul to the Laguna de Chiriqui oil pipeline. Similarly, most of its ports receive container cargo from the United States. Furthermore, the region has a large fleet under local flags, with Central America alone accounting for 10,000 ships, and more than 40,000 ships visit the area annually, and there were, on average, 14,000 passages of the Panama Canal alone

between 1990 and 1997. Given the potential for pollution caused by accidents involving these vessels, a regional seas programme for the north-east Pacific should promote preparedness to deal with cases of pollution, especially for down-current countries. Maps of sensitivity and vulnerability indices should be prepared and response capacities and modernized contingency plans should be improved and updated for each port etc. The mangrove areas from Mexico to Panama are extremely vulnerable to oil spills, which, in turn, would have dire economic consequences, especially for fisheries and tourism.

9. One distinctive environmental feature of the region is its pronounced vulnerability to extreme natural events. Its location in the so-called "Pacific circle of fire" means that it is seismically active, with more than 300 volcanoes on its territory and permanent tectonic activity, this places it permanently at risk. In the last two centuries the region known as "Mesoamerica" has been hit by nine destructive tsunamis, seven of them originating in the Pacific. Furthermore, the region is close to the trajectory of the Caribbean hurricanes, some of which have reached the region and affected the Pacific area. The tropical cyclones of the Pacific reach into the north of the region and the entire region is affected by the extreme events of the El Niño phenomenon. Between 1960 and 1965 there were more than 105 natural disasters, the most frequent and numerous of which were landslides and floods, for which much of the blame can be put on intense deforestation. The regional plan of action could help improve the response capacity of the countries of the region by working towards better forecasting and early warning systems, identifying high-risk areas, within the context of integrated coastal area management and in the creation of a way of life and attitudes appropriate to the special conditions of the region.

10. During the 1980s, Central America was gripped by a profound political and economic crisis marked by a cumulative 18.3 per cent drop in per capita gross domestic product and by political instability and insurgency throughout much of the region. The end of the cold war signalled the beginning of the end of armed conflict. In its place, a process of peace and integration was initiated by the meetings of Central American presidents. Within this framework, cooperation in the field of the environment was increasingly recognized as a positive way of promoting peace and integration. Even where major political differences obstructed the implementation of the peace agenda, there tended to be agreement among the various government officials responsible for the environment. The protection and sustainable management of the environment, the very antithesis of war, became the instrument for peace in Central America and resulted in the establishment of the Central American Commission on Environment and Development, and a number of important regional environmental agreements.

11. Nevertheless, despite rises in gross domestic product, the strengthening of Central American democracies and improved regional cooperation in the 1990s, economic and social instability continue to plague the Central American isthmus. The number of people living below the poverty line in the region increased from 67 per cent in 1989 to 73 per cent in 1994. The number of households living in poverty fluctuated in 1997 between 74 per cent and 20 per cent, and the percentage of homes in a situation of extreme poverty fluctuated between 48 per cent and 7 per cent. The poorest provinces of some countries in the region can be found along the Pacific. A regional seas programme for the north-east Pacific will help strengthen regional environmental cooperation and, in turn, strengthen the Central American peace and integration process, especially as regards issues such as food security and environmental security.

12. As far as food is concerned, the sustainable development of marine resources is crucial for an impoverished region like Central America. Although fish provide the major world source of food derived from the wild, Central America, with the exception of Panama, has the lowest per capita consumption of fish and seafood in Latin America (less than 1 kg per annum). In general, the tropics have a much greater species richness and endemism than temperate or arctic regions. Nevertheless, only 16 per cent of world fish production is provided by tropical fisheries. Most of the countries in the region fall into category three of hunger prevalence (between 5 and 19 per cent of the population being malnourished) and the average daily intake of protein in the region is 64.1 grams. A regional seas programme that addresses the management and sustainable use of marine resources will help alleviate the problem of inadequate nutrition in Central America, as well as supporting the efforts under way to stabilize the region economically and politically.

13. Over 90 per cent of the population of Latin America live on the drier Pacific side of the Central American isthmus. It is here that pressures on natural resources have been most acute. Great swathes of forest have been cut down and replaced by rangelands, resulting in extensive loss of biological diversity, land degradation and pollution of freshwater and coastal waters. The mangroves are also coming under greater pressure. As the natural systems break down and environmental security deteriorates, an ever increasing number of environmental refugees are encroaching on the highlands and Caribbean forested lands, including protected areas, most of which are unsuitable for sustained agricultural use and are more suited for forestry development. A regional seas programme is required which will assist the Governments of the north-east Pacific region in curbing marine and coastal degradation from land-based activities and promote the economic development of the region through the sustainable development of its coastal and marine resources. An environmentally sounder approach to the management of inland ecosystems should aim at reversing the deterioration of environmental security and at controlling problems associated with environmental refugees.

## II. OBJECTIVE

14. The main objective of the plan of action is to provide a regional cooperative framework for promoting and facilitating the sustainable management of the marine and coastal resources of the countries of the north-east Pacific for the well-being of the present generation and future generations in the region.<sup>3</sup>

## III. GOALS

15. The action plan has the following principal goals:

- (a) Assessment of the quality of the marine and coastal environment, and of the associated freshwater environments, which will serve to identify common problems and issues that need to be addressed jointly by member countries at the political, scientific and technical, and programmatic levels;
- (b) Integrated management of the marine environment and coastal areas, including interlinkages with climate change, the vulnerability of the region to natural risks, shared ecosystems and resources, marine and coastal biological diversity, transboundary pollution, transboundary movement of hazardous wastes, catchment areas connected with coastal areas, the economic evaluation of natural resources and environmental services;
- (c) Sound management of land-based and sea-based activities that can affect the quality of the marine environment and the environment of coastal areas and associated freshwater systems, together with the development of the necessary measures to put in place preventive approaches and the "polluter pays" principle regarding marine pollution and other forms of environmental deterioration;
- (d) The exchange and dissemination of information at the regional level, and greater public awareness of coastal and marine topics and issues;
- (e) Increased compliance with the global and regional legal instruments relevant to the marine and coastal environment which have been endorsed by the Governments of the region;
- (f) The formulation and application of regional and national legal instruments for the protection of the marine and coastal environment, together with the provision of advisory services to the Governments of the region regarding the implementation of relevant international conventions, including the application of legal measures to obtain compensation for ecological damage and/or procedures to establish claims in

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<sup>3</sup> The objectives of the action plan are identical to those of the Convention on the Protection and Sustainable Development of the Marine and Coastal Area of the North-East Pacific.

situations of environmental deterioration, without prejudice to the procedures and norms that may apply in such situations, given the sovereignty of the States;

(g) The establishment of institutional, financial and support resources for the efficient and sustainable implementation of the plan of action, including structures and mechanisms for national and regional coordination;

(h) Giving impetus to cooperation between countries in environmental management procedures relating to activities within their jurisdiction or under their control which could have an adverse effect on the marine, coastal environment or the freshwater environments associated with them, of other States or on areas situated outside their national jurisdiction, through notification, information exchange and consultation;

(i) Support for intersectoral and inter-institutional integration in applying environmental management measures and in the participation of local authorities and civil society, in accordance with each country's domestic procedures;

(j) Efforts to support and strengthen capacity-building through the design and conduct of training courses at appropriate levels on special topics related to the evaluation, monitoring and follow-up of the pollution of coastal and marine areas and of associated freshwater environments in the region.

#### IV. BUILDING BLOCKS OF THE ACTION PLAN

16. The action plan should contribute to the solution of the environmental problems of the marine and coastal environment and associated freshwater systems that are faced by all the States of the region, and should strengthen their cooperation in addressing these problems. To this end, the action plan should build on the following relevant environmental programmes, initiatives and instruments which are contributing to the objectives and goals of the plan:

(a) Ongoing programmes for monitoring marine pollution implemented by international bodies such as UNEP, specifically its Global International Waters Assessment (GIWA); the International Atomic Energy Agency (IAEA); the International Maritime Organization (IMO); the Intergovernmental Oceanographic Commission (IOC) of the United Nations Educational, Scientific and Cultural Organization (UNESCO); and the Joint Group of Experts on the Scientific Aspects of Marine Environmental Protection (GESAMP);

(b) International, regional and global conventions and agreements and other processes related to the marine and coastal environment, including:

- (i) Global Programme of Action for the Protection of the Marine Environment from Land-based Activities, hereinafter referred to as the Global Programme of Action;
- (ii) International measures on the use of persistent organic pollutants (POPs);
- (iii) IMO conventions on pollution of the marine environment;
- (iv) Basel Convention on Transboundary Movements of Hazardous Wastes and their Disposal;
- (v) United Nations Convention on the Law of the Sea;
- (vi) Jakarta Mandate on the Conservation and Sustainable Use of Marine and Coastal Biological Diversity, adopted in the framework of the Convention on Biological Diversity;
- (vii) International Coral Reef Initiative;



- (viii) Intergovernmental Panel on Climate Change, in particular its work on the effects of global warming on the marine and coastal environment;
- (ix) Work of the United Nations Framework Convention on Climate Change related to environmental impact assessments and adaptation;
- (c) Principles of the United Nations Conference on Environment and Development and the actions contained in chapter 17 of Agenda 21, on oceans and coastal areas;
- (d) Training, Education and Mutual Assistance in Marine Sciences programme being implemented by IOC/UNESCO;
- (e) International activities on the study of the El Niño phenomenon;
- (f) Work programmes of non-United Nations organizations working in the marine and coastal environment, such as the Organization of American States (OAS) and, in particular, non-governmental organizations such as the World Conservation Union, the World Wide Fund for Nature (WWF) and Conservation International;
- (g) Programmes and activities relating to marine pollution and to the management of coastal and marine areas of other regional action plans of the UNEP regional seas programme, especially the action plan for the wider Caribbean, the action plan for the south-east Pacific and the relevant regional components of the Global Programme of Action for the Protection of the Marine Environment from Land-based Activities;
- (h) Activities to evaluate resources and to introduce economic and social criteria, catchment area management and issues associated with the United Nations Convention on the Law of the Sea being pursued by the United Nations Economic Commission for Latin America and the Caribbean (ECLAC);
- (i) Activities related to basic sanitation, monitoring of discharges, pollution and protection of human health from pollution of coastal waters being conducted by the Pan-American Health Organization (PAHO/WHO);
- (j) Programmes, activities and positive national experiences in the protection of the marine and coastal environment which have elements that can contribute to attaining the objectives of the plan of action;
- (k) Regional and global networks for the exchange of scientific information and on environmental issues and international, regional and national environmental information systems;
- (l) University programmes on specific topics offered in the region in the form of training courses on issues in the programme which require training at the appropriate levels.

## COMPONENTS OF THE ACTION PLAN

### V. ENVIRONMENTAL ASSESSMENT

17. Environmental assessment is a major component of the plan of action, providing the scientific basis and support for the implementation of the other components of the plan. Assessments will be carried out through basic studies using standard international techniques and methods, analytical quality control to ensure that the resulting information is replicable and can be used in drawing up projections, trends, establishing policies and designing control measures and programmes.

18. Priority will be given to determining the quality of the marine and coastal environment and associated freshwater systems, on the basis of identification and assessment of, first, the main pollutant sources and categories; second, inputs and activities that cause environmental deterioration, together with projections and

trends; third, vulnerability to natural disasters and phenomena, as well as response capacity; fourth, the status of marine resources and ecosystems; and, fifth, human health and food security.

19. As a first step in the basic studies, in order that the assessment of the regional marine and coastal environment has a sound scientific basis and that the information will be comparable throughout the region, guaranteeing replicability and integration into the global network on marine pollution, techniques and methodologies that are commonly used in scientific research studies on marine pollution will be adopted and standardized and will be applied. In this way the participating institutions will be provided with the efficiency level required for research. In assessing the potential of the region to respond to natural phenomena, the monitoring and early-warning techniques, methods and procedures used in the relevant global systems will be taken into account, and high-risk and highly vulnerable areas will also be identified.

20. In view of the interdisciplinary character of the studies, due account will also be taken, for the purpose of basic environmental assessment, of updated and revised national reports, the regional analyses of pollution of the marine, coastal environment and associated freshwater systems by land-based activities, information provided by other national and regional programmes related to oceanography, marine meteorology, marine biology, studies and fisheries, etc.

21. The following activities, which correspond to the Global Programme of Action for the Protection of the Marine Environment, Coastal Areas and Associated Freshwater Systems [from] Land-based Activities, are recommended for inclusion in the basic coordinated environmental assessment programme, which appears in annex 1 to the present plan document. They are not listed in any order of priority. If an order of priority is considered necessary, it shall be established in each case by the Governments participating in the plan of action. The activities will need to be built on an intensive programme of training in the use of basic techniques and methods for studies of marine and coastal pollution by heavy metals, pesticides and other persistent organic pollutants (POPs), oils and radionuclides in organisms, waters and marine sediments, through specific regional courses, training in reference laboratories, practice in intercalibration and comparison, workshops and seminars:

(a) Assessment of oil pollution (chronic and operational), its effects and the establishment of patterns, including:

- (i) Adoption of common methods and techniques, including intercalibration and analytical quality control in laboratories, for determination of the levels and distribution of petroleum hydrocarbons on beaches, in organisms and in sediments;
- (ii) Systematic observations in specific areas of interest where there are operational and continuous discharges of hydrocarbons; Appropriate provision and use of analytical standards, freeze-dried samples and reference materials;
- (iii) Use of handbooks (Reference Methods developed by the regional seas programme);
- (iv) Local assessment in coastal areas to establish possible dispersion routes of pollutants in marine currents;
- (v) Inventories of sources of pollution by petroleum and the effects of accidental oil pollution on critical and sensitive marine areas, as well as the existing regional capacity to respond to oil spills;

(b) Assessment of the magnitude of marine and coastal pollution resulting from domestic wastes, its effects and trends, including:

- (i) Adoption of uniform analysis methods for particular pollutants of regional interest and their intercalibration;

- (ii) Adoption of microbiological techniques to assess microbiological pollution in water and on beaches;
  - (iii) Inventory of domestic/municipal sources with direct/indirect discharges into the sea, use of rapid pollution assessment formulae;
  - (iv) Description of the discharges and assessment of methods of treatment and final disposal and their level of efficiency;
  - (v) Estimate of the discharges and projection of trends in the light of population increase in the countries participating in the plan of action;
- (c) [text appears to be missing here] intercalibration and the use of sampling techniques;
- (i) Studies of the levels and distribution of pollutants (heavy metals, pesticides and POPs) in water, marine organisms and sediments;
  - (ii) Inventories of industrial and mining sources, use of rapid estimate formulae and an estimate of the direct or indirect (via rivers) pollutant loads they discharge into the sea, with information on whether treatments exist and on their efficiency, and an estimate of trends and future projections in accordance with States' development plans for industry and mining in coastal areas; and
  - (iii) Determination of the concentrations of pollutants in marine organisms of social and economic importance, including the effects on these organisms and on the food chain;
- (d) Assessment of marine pollution by agricultural activities, including coastal aquaculture, based on:
- (i) Adoption and application of methods of analysis of particular pollutants of common, regional, global and local interest, and exercises in the intercalibration and the use of sampling techniques;
  - (ii) Studies of the levels and distribution of pollutants (sediments, heavy metals, agrochemicals, POPs) in water, marine organisms and sediments;
  - (iii) Inventories of industrial and mining sources and an estimate of their pollutant loads, direct or indirect (via rivers), discharged into the sea, with information on whether treatments exist or not and on their efficiency, and an estimate of trends and future projections in accordance with States' development plans for agriculture in coastal areas;
  - (iv) Determination of the concentrations of pollutants in marine organisms of social and economic importance, including effects on these organisms and on the food chain;
- (e) Assessment of the pollution of the marine environment in the coastal area and in associated freshwater systems by agricultural sources and activities through the following measures:
- (i) Adoption of uniform techniques and methods to identify agricultural pollutants of common regional interest (persistent organic compounds, nutrients – agricultural fertilizers);

- (ii) Determination of the magnitude of pollution from agricultural sources and activities by measuring agricultural pollutants on environmental measurement grids (marine organisms and sediments, catchment areas);
  - (iii) Inventory of agricultural pollution sources, on the coast and in associated catchment areas, with information on the area being farmed, type of crops, harvest periods, yields and quantity of technical agricultural inputs;
  - (iv) Preparation of country profiles, trends and projections based on agricultural policies;
- (f) Assessment of the movement of sediments and their deposit in the coastal areas of the region, by identifying and estimating:
- (i) Principal routes for the arrival of sediments in coastal areas and the areas where they are deposited, with an estimate of the sediment load;
  - (ii) Inventory of the main activities and sources generating sediments in water, including information on the discharge rates, surface area of the catchment basin and discharge volumes;
  - (iii) Identification of high-risk areas for erosion;
  - (iv) Determination of the effects of discharges on the adjoining ecosystems;
- (g) Assessment of the environmental quality of the coastal and marine ecosystems of the region, with particular attention to the mangrove ecosystem and related environments, through the following measures:
- (i) Identification of the main affected mangrove areas, with information on the intensity and extent of their deterioration and its causes;
  - (ii) Inventories of current conservation, recovery and protection measures, with an indication of their effectiveness;
  - (iii) Identification of trends and projections and environmental profiles;
- (h) Study of the extent of atmospheric pollution of the marine environment;
- (i) Study of the levels and distribution of microbiological pollutants present on the shores and in coastal waters, including:
- (i) Studies of the water quality in fisheries and aquaculture enterprises, taking into account discharge outlets and the possible dispersion of pollutants and the location of fisheries and the development of aquaculture;
  - (ii) Studies of the water quality and of the marine organisms intended for human consumption, to determine the relation between water quality and the incidence of disease among the population;
- (j) Assessment of the marine and coastal biotic wealth of the region, including:
- (i) Inventories of ecosystems rich in biological diversity;
  - (ii) Studies of the scale on which biodiversity is represented in the ecosystems;

- (iii) Identification of key species and coastal and marine ecosystems that are highly vulnerable or require special protected status; and
- (iv) Identification of activities that have harmful effects on marine and coastal biological diversity, with some indication of their magnitude;
- (k) Special studies on specific areas and ecosystems, including:
  - (i) Studies on protected marine and coastal areas (national nature parks, wildlife sanctuaries, marine life refuges, etc.), so that these may serve as comparators; and
  - (ii) Studies on the magnitude and significance of pollution and other forms of deterioration caused by human activities, such as tourism, coastal aquaculture, urban and industrial development, shipping, agricultural development in areas of ecological interest, such as mangrove ecosystems, coral reefs, coastal lagoons and estuaries;
- (l) Studies to identify and assess the effects of pollution on marine communities and organisms in the region (laboratory trials), through:
  - (i) Studies of various types of biological trials in order to try to develop a coastal water quality benchmark for the preservation of wildlife;
  - (ii) Studies on the toxicity of sediments, following widely used and agreed protocols;
  - (iii) Studies on the effects of pollution on communities of marine organisms, using relevant ecological indices;
- (m) Assessment of the environmental quality of the regional coastal area, including the linked catchment areas, through:
  - (i) Inventory of activities in the coastal area and linked catchment areas, their magnitude and location, and information on their probable effects on the quality of the marine and coastal environment, including trends and information on future social and economic development;
  - (ii) Identification of low-lying areas that are vulnerable to sea-level rise and of activities and resources that are endangered and of sediment traps in the catchment basins and coastal areas;
  - (iii) Identification of coastal areas, activities and resources that are at risk from tsunamis and other extreme natural events and of areas in catchment basins with a high erosion risk;
  - (iv) Assessment of erosion of the coastal area and linked catchment basins, with information on sediment traps, the volume, quality and type of sediment, as well as phenomena of coastal stability and accretion;
  - (v) Identification of areas highly vulnerable to the effects of extreme natural events and other areas of high risk;
- (n) Study of the social and economic effects of pollution (case studies) in areas of special interest in the north-east Pacific, including consideration of integrated waste management on the coast;
- (o) Assessment of institutional capacities for the study, surveillance and management of marine pollution and other forms of environmental deterioration and of training needs, as well as the capacity for transmitting and exchanging information, both in real time and on a deferred basis, on the coastal and marine environment and associated freshwater systems of the north-east Pacific, and also of the arrangements for

inter-institutional and sectoral integration and participation in programmes, plans, projects and activities relating to the protection of the marine environment, coastal areas and associated freshwater systems of the north-east Pacific.

22. Assessments and inventories of the sources and effects of regional coastal and marine pollution, including uses, trends and changes in the modalities of those uses of the marine and coastal areas, and legal and institutional issues, as required, will be updated periodically with a view to conducting regular assessments of the quality of the regional marine and coastal environment and possible modifications to the plan of action.

23. The findings of the assessments constitute the basis for the formulation of appropriate management measures, including the preparation of specific plans for categories and types of pollutants and for the design of monitoring and surveillance systems, the establishment of control measures, the development of standards and the determination of policies.

## VI. ENVIRONMENTAL MANAGEMENT

24. Since protection of the marine and coastal environment and associated freshwater systems is a prerequisite for achieving the sustainable social and economic development of the States participating in the action plan, the environmental management component of the plan will take into account, among others, the following activities. These are not listed in any order of priority. If any order of priority is considered necessary, it will be established in each case by the Governments participating in the action plan:

(a) Review, expansion and adoption, where necessary, of national, regional and international programmes and projects that contain appropriate environmental management practices, such as projects of the United Nations Development Programme (UNDP), the Food and Agriculture Organization of the United Nations (FAO), UNESCO and IOC, IMO, the environmental health activities of the World Health Organization, activities relating to the economy of natural resources and biological diversity and the environmental impact assessments of the Economic Commission for Latin America and the Caribbean and the management of catchment basins of (ECLAC), and activities of IAEA (MESL/IAEA) relating to intercalibration, methods and techniques, the supply of reference materials, the preparation of handbooks on the use of analytical methods, the formulation of programmes for monitoring analytical quality and other activities necessary for generating reliable, high-quality information which would help give a picture of the environmental situation of the marine, coastal areas and of the associated freshwater systems in the region of the north-east Pacific;

(b) Formulation and implementation of coordinated programmes to prevent, monitor, reduce and control oil pollution, including:

- (i) Setting up national contingency plans to deal with accidental spills caused by oil prospecting, drilling, transport and refining activities, including the preparation of maps of critical areas, vulnerable resources and priorities for protection in the event of accidental oil pollution;
- (ii) Design and implementation of models and practical operations for oil pollution control;
- (iii) Feasibility studies relating to port facilities for the disposal of dirty ballast and wastes from ships;
- (iv) Establishment of a system of regional assessment and cooperation for emergency action to deal with oil spills, taking into account existing methods of dealing with such incidents and the varying capacity and technology of the participating countries;
- (v) Application of preventive and precautionary criteria in response to chronic or operational marine pollution by petroleum;

- (vi) Promotion of navigational safety through proper mapping of the coasts and maritime routes, as required;
  - (vii) Establishment of a system for the exchange and dissemination of information relating to degradation of the marine environment by regional activities connected with the use, transport and refining of petroleum;
  - (viii) Preparation of environmental management plans for ports and port terminals, with guidelines for the application of response measures in emergency situations;
  - (ix) Development of environmental impact assessment guidelines for port activities, particularly for dredging activities, and handbooks on the use of international systems for compensation and claims in the event of accidental oil pollution;
  - (x) Preparation of handbooks for the conduct of environmental auditing for ports and port terminals;
- (c) Formulation and implementation of coordinated regional programmes to prevent, reduce and control pollution by domestic, agricultural, industrial and mining wastes, through the preparation of [a] strategy for the support and formulation, as appropriate, of national plans, including:
- (i) Development and implementation of standards and guidelines for discharges of solid and liquid domestic, mining, industrial and agricultural wastes;
  - (ii) Design and implementation of activities to monitor and control specific parameters relating to domestic, agricultural, industrial and mining discharges, monitor baseline levels and identify trends, including the use of control organisms to monitor pollution;
  - (iii) Development of treatments for effluents and wastes from the sources mentioned above, taking due account of the social and economic development of the participating States;
  - (iv) Development of principles and guidelines to determine water quality criteria in relation to the various uses in the regional marine and coastal environment, taking into consideration appropriate emission factors, standards based on discharge limits set in accordance with the hazard level and toxicity of the discharges;
  - (v) Application of preventive and precautionary criteria and approaches and application of the “polluter pays” principle, to avoid, reduce and control pollution of the sea and coasts and associated freshwater systems from the sources mentioned above;
  - (vi) Design of economic incentives, as required, for the application of cleaner technologies and other options, in line with the internalization of environmental costs, in order to avoid the degradation of the marine environment by these sources of pollution;
  - (vii) Consideration of options for the replacement of production methods, obsolete technologies and systems by cleaner technologies, as applicable;
  - (viii) Assessment of the social and economic effect of pollution in the marine environment and coastal areas and associated freshwater systems from land-based sources and activities, based on case studies, including the development of an appropriate methodology;
  - (ix) Publicity and awareness-raising through appropriate and sufficiently extensive information campaigns and activities;
  - (x) Establishment of strategies for the abatement and elimination of discharges of organohalogen compounds and other synthetic organic compounds;

- (xi) Consideration of integrated waste management through case studies;
  - (xii) Formulation of strategies to promote the control of anthropogenic discharges of nitrogen and phosphorus introduced into coastal areas in localities prone to eutrophication or areas with poor water circulation;
  - (xiii) Preparation of handbooks on the use of better techniques and methods to be recommended to countries with a view to reducing and controlling marine and coastal pollution and pollution of the associated freshwaters from the sources under consideration;
  - (xiv) Preparation of handbooks on environmental auditing for each of the pollution sources under consideration;
- (d) Formulation and implementation of a coordinated regional programme to prevent, reduce and control pollution of the marine and coastal environment and associated freshwater systems originating from associated catchment areas, by supporting the formulation and implementation of national plans in highly disrupted catchment areas, including:
- (i) Control and prevention of coastal erosion and siltation arising from anthropogenic factors related to land use in the basins of rivers that flow into the sea;
  - (ii) Recommendations for changes in agricultural practices, methods of extraction [of] resources and in the use of beaches in catchment areas that drain into the sea;
  - (iii) Design of strategies and their implementation to facilitate decisions by countries to place catchment areas under special management, in the context of the policies and legal structures in each country, including assessment of the social and economic effect of such decisions; and
  - (iv) Preparation of handbooks on the environmental management of catchment areas linked to coastal and marine areas of the north-east Pacific region;
- (e) Formulation and implementation of a coordinated regional programme for the integrated management of the region's marine environment and coastal areas, incorporating the conduct of national case studies and including:
- (i) Recommendation of policy principles, including the principle of adopting integrated decisions with the participation of interested groups and favouring compatibility of uses;
  - (ii) Recommendation of preventive and precautionary approaches in the planning and execution of projects, including prior impact assessments and systematic observation of the environmental effects of large projects on the marine and coastal environment;
  - (iii) Development of methods of environmental accounting that would reflect changes in value due to the various uses of marine and coastal areas, including those causing coastal erosion, the loss of resources and the destruction of habitats;
  - (iv) Use of techniques and methods appropriate to features of the region for integrated coastal area management (ICAM), including the use of geographical information systems (GIS) and national land management plans; and
  - (v) Development of a uniform methodology to disseminate experience in dealing with such cases throughout the region;



(f) Design of a coordinated regional monitoring programme for natural phenomena that originate in the sea and affect the marine and coastal environment of the region, including a strategy to support, where appropriate, national plans to prevent and address disasters, through the following measures:

- (i) Establishment and operation of a coordinated monitoring and forecasting programme for ocean-air interaction, especially the El Niño phenomenon, with the aim of providing oceanographic and atmospheric information (real-time marine meteorology);
- (ii) Establishment and adoption of uniform intercalibrated measurement techniques and procedures for the storage and management of data for the systematic observation of the regional marine environment;
- (iii) Establishment and implementation of a coordinated monitoring programme for the forecasting and modelling of atmosphere-ocean interaction phenomena, especially the El Niño Phenomenon;
- (iv) Preparation of guidelines, techniques and methods to assess the effect of natural disasters in coastal and marine areas of the north-east Pacific, in particular, computer models for tsunamis from nearby sources;
- (v) Adoption and use of a methodology for assessing the vulnerability of the coast of the region and recommendation of response strategies in respect of priority zones in marine areas and the most vulnerable coastal areas;
- (vi) Preparation of maps of high-risk areas and areas highly vulnerable to the effects of natural disasters originating in the sea in the north-east Pacific region [, including a] workshop to identify and recommend techniques and methods to assess the effect of natural disasters on the coastal and marine ecosystems of the north-east Pacific;
- (vii) Design of regional emergency plans for disasters caused by natural phenomena, such as El Niño, sea-level rise, tsunamis, hurricanes and sea storms;

(g) Design and implementation of plans under the programmes for the re-establishment, recovery and rehabilitation of ecosystems and habitats degraded by the various sources of pollution, siltation and other forms of deterioration;

(h) Formulation and implementation of a coordinated programme for the monitoring, control and supervision of the uses of coastal and marine biological diversity, which emphasizes management of the uses of the mangrove ecosystem, the development of coastal aquaculture, in particular marine shrimp farming, controlling the use of protected coastal and marine areas for tourism, to include, among other measures:

- (i) Design of in situ conservation measures that complement one another through the establishment of new marine and coastal protected areas, including the establishment of a regional cooperation network of marine and coastal protected areas in the region;
- (ii) Identification of threatened or endangered marine and coastal species that may require special measures of protection and recommendation of measures to achieve this;
- (iii) Design of operational plans for the conservation of vulnerable, fragile and highly diverse habitats and ecosystems, such as mangroves and coral reefs;
- (iv) Design of programmes for the re-establishment of populations of marine and coastal organisms that are undergoing depletion at a dangerous rate;
- (v) Management of activities in the buffer zones surrounding the protected areas in the region;

- (vi) Establishment of a programme to monitor the effects of natural phenomena on biological diversity;
  - (vii) Design of programmes to protect traditional methods of fishing that do not harm marine and coastal biological diversity and to take full account of the traditional knowledge of the local community regarding marine and coastal biological diversity;
  - (viii) Design of strategies for applying the precautionary principle, and ecological techniques for the sound and sustainable use and protection of coastal biological diversity;
  - (ix) Design of national management plans for activities carried out in the mangrove ecosystem, based on the drafting of a regional management strategy;
  - (x) Conduct of case studies where it is important to apply management measures for activities carried out in mangrove areas, including recovery methods;
  - (xi) Activities for the environmental management of tourism in the coastal and marine areas of the north-east Pacific, including the shaping of a strategy for the application of management methods and the promotion of ecotourism in accordance with national tourism development plans and the preparation of a handbook on tourism management in coastal ecosystems;
  - (xii) Application of the "ecosystem approach" in the management of coastal aquaculture in the north-east Pacific region, including a corresponding atlas of high-risk areas for the development of coastal aquaculture and preparation of handbooks for the conduct of environmental auditing in the management of coastal aquaculture;
- (i) Design of a coordinated monitoring and control programme for the shipping of hazardous wastes in the region, to include:
- (i) Use of procedures in ports for the identification of hazardous wastes;
  - (ii) Formulation and development of national contingency plans to deal with accidental marine pollution during the transport of hazardous wastes;
  - (iii) Adoption of a system for notification and warning in the event of ecological accidents in ports arising from the maritime transport and handling of hazardous wastes;
- (j) Drawing up and periodic updating of a directory of institutions responsible for research on and management of the marine and coastal environment and other components of the regional action plan, as the basis for the setting up of institutional networks for the implementation of various programmes under the plan;
- (k) Design and maintenance of databases and an information exchange system for the management of the marine and coastal areas of the north-east Pacific;
- (l) Identification, selection and study of sustainability indicators for the assessment and environmental management of the marine, coastal and associated freshwater environment of the north-east Pacific, to include:
- (i) Preparation of a handbook for their use;
  - (ii) [A strategy/strategies] for their application in national environmental accounting;
  - (iii) Design and application of a programme to verify the importance of the said indicators; and

- (iv) Preparation of a handbook for the conduct of environmental audits using these indicators;
- (m) Provision of advisory services and assistance to Governments, when necessary, for the establishment or strengthening of institutions and of the necessary coordination mechanisms for the sound management of the marine environment and coastal areas, including the training of personnel involved in environmental management activities, as well as in areas such as the prevention, monitoring, reduction and control of pollution of the marine environment and the integrated management of coastal areas and the marine environment, including preventive measures against the effects of sea-level rise and ocean-atmosphere interactions;
- (n) Design and formulation of a coordinated programme of awareness-raising and dissemination of information to increase knowledge about the marine and coastal environment, aimed at the general public, coastal communities and users of ocean resources, by means of:
  - (i) Preparation of educational packages and community information courses on key issues of the marine and coastal environment;
  - (ii) Creation of various kinds of teaching materials aimed at highlighting the importance of the regional marine and coastal environment; and
  - (iii) Organization and conduct of publicity campaigns at various levels on specific aspects of the protection of the regional marine and coastal environment and its resources.

## VII. LEGAL COMPONENT

25. The Governments, bearing in mind that international conventions constitute a fundamental and necessary basis for regional cooperation in the management of the marine and coastal environment and its protection and preservation against all types and forms of environmental deterioration, agree to accede to the Convention for the Protection and Sustainable Development of the Marine and Coastal Environment of the North-East Pacific. Supplementary or technical proposals related to this Convention will be made through the appropriate channels.
26. As complementary measures to the Convention, the Governments agree to undertake the following actions:
- (a) Maintain an updated register of State legislation relating to the protection of the marine and coastal environment, including that referring to, among other things, the use of marine and coastal resources and the use of beaches;
  - (b) Issue and/or adjust national standards, as necessary, by harmonizing relevant national regulations with international legal instruments for the effective implementation of the Convention, as well as any subsequent supplementary instrument agreed on by the parties to the Convention.
27. The Governments recognize the advisability of taking into account other international conventions related to the protection of the marine environment and its resources, such as those listed in annex III.
28. Governments should consider the adoption of supplementary agreements that would cover, among other issues, the following, which are not listed in any order of priority:
- (a) Marine pollution from land-based activities;
  - (b) Specially protected areas and wildlife;
  - (c) Maritime transport of radioactive wastes and other hazardous wastes;

- (d) Pollution of the ocean surface, subsurface and bottom;
- (e) Pollution resulting from prospecting and drilling for oil on the continental shelf;
- (f) Introduction of exotic species for coastal aquaculture;
- (g) Environmental impact assessment of activities and projects close to the shoreline;
- (h) Assistance and cooperation to improve the forecasting ability in the region regarding the El Niño phenomenon and other frequent or infrequent natural events occurring in the sea or in its depths;
- (i) Equitable and sustainable use of the biodiversity of the sea (its surface and its depths);
- (j) Sustainable use of shared catchment areas linked to marine and coastal areas;
- (k) Environmental pollution and deterioration in the regional marine and coastal environment and its resources, resulting from war and other hostile acts.

## INSTITUTIONAL, FINANCIAL AND SUPPORT ARRANGEMENTS

### VIII. INSTITUTIONAL ARRANGEMENTS

29. The efficient implementation of the plan of action will depend on the measures adopted regionally and nationally, since these are interdependent. As a consequence, it is very important to identify the lines of authority and communication regarding legal issues and technical matters and, at the same time, to develop the appropriate institutional capacities and cooperation mechanisms at each of these levels.

30. Coordination of the plan of action will require the following structure:

#### General authority

31. The general authority of the plan of action shall be vested in the regular meetings between representatives of the Governments (intergovernmental meetings), which shall be responsible for reviewing progress in the implementation of the plan of action and for approving its implementation programme. The intergovernmental meetings will also consider the financial, technical and legal consequences of their decisions and determine the modifications required for the success of the plan. Such meetings shall therefore constitute the authority responsible for approving programmes and budgets, the work plan and other activities, before they are put into operation.

32. The intergovernmental meetings shall be convened every second year, to coincide with the meetings of the Contracting Parties to the convention. Extraordinary meetings may also be held when circumstances so dictate and there is a consensus on the part of the Governments. These meetings shall be convened by the regional coordinating unit.

33. In the meetings of the general authority, policy decisions shall be adopted in respect of all financial and substantive matters related to the plan of action and the Convention and, in particular, those meetings shall:

- (a) Review and assess the progress achieved in the implementation of programmes since the previous meeting, using as a basis a report jointly prepared by the regional coordinating unit and the advisory group;
- (b) Approve the general work plan and specific projects to implement the programme for the north-east Pacific for the forthcoming period;

- (c) Approve the necessary budget resources for the work plan and the allocation thereof.

#### Advisory group

34. The general authority shall establish an advisory group consisting of technical experts designated by the Governments participating in the plan of action for periods of two years. The advisory group will be responsible for providing guidance within the framework of the decisions approved by the intergovernmental meeting, in relation to the technical and scientific aspects of the plan. In order to carry out its work, the advisory group will hold meetings prior to the meetings, at which it shall:

- (a) Review and assess the progress made in implementing the work plan and the results of the latest budgetary period;
- (b) Submit recommendations and offer advice to the regional coordinating unit on the formulation and preparation of new programme elements to be submitted to the general authority for approval;
- (c) Review the recommendations of meetings, working groups, seminars, etc., drawn up in the course of the work plan with respect to the work plan's technical links to the provisions of the Convention and of its supplementary international instruments for the protection of the marine environment, and propose priorities for implementation of the work plan; and
- (d) Review the work plan proposed by the regional coordinating unit in the light of the development of the components of the plan of action.

35. The advisory group shall be convened by the regional coordinating unit and shall work on the basis of information provided by the unit. The decisions of the advisory group shall take the form of recommendations and the regional coordinating unit shall present them, through the reports of the advisory group, to the intergovernmental meetings. The meetings of the advisory group may be attended by representatives of international bodies invited by the regional coordinating unit in order to brief the advisory group on specific issues. The advisory group will comprise technical experts with recognized experience, and they will act as advisers in their personal capacity.

#### Regional coordinating unit

36. To ensure the integrated implementation and coordination of the plan, the Governments of the region shall establish a regional coordinating unit for the plan. To this end, the regional coordinating unit shall be responsible for the organization of meetings, courses, seminars, workshops, visits of experts and other types of activities which are in accordance with the work plan of the plan of action. The regional coordinating unit will be responsible for the implementation and operation of the plan; the organization and operation of the mechanisms necessary for the coordination of all planned activities, such as the coordinated study programmes and pilot projects; development of the legal components; coordination with international agencies and secretariats of conventions and agreements in respect of issues related to the objectives of the plan of action; the administration of the financial resources of the plan; and other activities that may be entrusted to it by the intergovernmental meetings for the implementation of the plan.

37. The regional coordinating unit shall have the following mandate:

- (a) To receive and coordinate proposed initiatives inspired by the plan of action that may be presented to it by the Governments through the channels that may be established for the coordination of the plan;
- (b) To report regularly to Governments and international organizations supporting the plan of action on the progress made in its implementation, the results achieved, the difficulties encountered and the solutions found;

- (c) To prepare project and programme proposals for specific activities agreed as part of the plan of action;
- (d) To negotiate assistance and financial and technical resources from international organizations for specific projects and activities agreed upon as part of the plan and coordinate their implementation;
- (e) To organize meetings of the general authority and the advisory group to be held in relation to the plan of action, including the preparation and distribution of the corresponding documentation;
- (f) To administer the financial resources of the plan of action in accordance with the budget and budgetary allocations approved by the general authority;
- (g) To arrange, in consultation with the Governments participating in the plan of action, agreements and memoranda of cooperation with other international organizations and the private sector for specific activities in support of the plan of action; and
- (h) In consultation with the Governments participating in the plan of action, to decide on the timetable for activities and their allocation within the region, taking into account, inter alia, the facilities and capacities available for the implementation of those activities.

38. The location of the headquarters of the regional coordinating unit shall be agreed upon in the course of the intergovernmental meeting to adopt the action plan and it shall be established by means of a headquarters agreement, in accordance with international law, in a country of the region. The operation of the regional coordinating unit shall be financed using the resources of the plan of action, under the direction of the director of the regional coordinating unit, who shall have the status of an international civil servant. Nevertheless, if it so wishes, the headquarters country shall, however, be able to make a voluntary contribution to support the establishment of the headquarters, by providing physical infrastructure and other facilities without prejudice to its financial obligations under the plan.

39. For those tasks under the plan of action that may require specific expertise, the regional coordinating unit shall have recourse to the assistance of international consultants, with international staff status and with the amenities and privileges established in the headquarters agreement. The regional coordinating unit shall also be provided with administrative personnel and the assistance of consultants for specific tasks when required by the programmes.

40. All the assets, equipment, books and property of the regional coordinating unit acquired using resources of the plan of action shall belong to the plan, except for those whose ownership is different in accordance with the headquarters agreement concluded with the country in which the regional coordinating unit is located and which were not acquired using resources belonging to the plan of action. In any event, such assets will be regulated by international public law.

#### National coordinating centres (NCC)

41. Each of the Governments participating in the plan of action will establish a national coordinating centre, which will be responsible for coordinating all matters related to the plan of action within each country. Each country shall determine the composition and structure of its national coordinating centre. The national coordinating centres may be the same bodies as those designated for the regional component of the Global Programme of Action for the Protection of the Marine Environment and Coastal Areas and Associated Freshwater Systems by Land-based Sources.

42. The specific function of the national coordinating centres shall be to act as official channels of communication between the regional coordinating unit and the respective Governments, and they shall also coordinate the participation of national bodies and institutions and the private sector in the agreed work plan.

### National institutions

43. National institutions, such as marine research centres, laboratories, universities and government departments, should provide the institutional base to implement the technical aspects of the operation of the plan. These institutions shall be organized in institutional networks to implement the plan's assessment components.

44. These national institutions shall be designated by Governments. Where necessary, the capacities of the institutions should be strengthened, especially with regard to the provision of expertise and training for their effective participation in the plan, taking into account the differences existing between countries participating in the plan of action with regard to capacities, technical demands, and the resources needed to assess and monitor the environmental quality of the marine and coastal environment. A first phase of implementation of the plan of action will address initial capacity-building, including personnel training, the development of operational strategies and the design and implementation of basic studies, the adoption of uniform criteria.

45. The action plan recognizes the existence of differences in institutional capacities among member countries and envisages varying degrees of participation in responding to problems of common interest. The stepwise implementation of the plan is proposed as a strategy to reduce the differences in capacities. Those member countries with greater scientific, technical, technological and economic capacities will be called upon to support the implementation of the plan by providing training at appropriate levels, in accordance with the needs of programmes and countries with more limited institutional capacities.

46. Depending on the available financial resources and drawing upon the budget of the plan of action, the national institutions responsible for the operational phase (agreed coordinated programmes) shall be provided with technical assistance, training and other kinds of support, at appropriate but fundamental levels to strengthen their capacities to participate fully and usefully in the work programme.

### Civil society

47. The plan recognizes the key role that civil society can play in preserving the marine and coastal environment and in associated freshwater systems, and will provide a channel for realizing this potential without clashing with collective regional interests. The plan is therefore open to participation and financial support from private enterprise and other interested civic groups, subject to the guidance provided by member Governments.

### International organizations

48. Recognizing the decisive contribution that may be made to the plan of action by international organizations, the regional coordinating unit, when requested by the general authority, shall draw up agreements, such as memoranda of understanding and cooperation briefs, and shall request technical and other support for specific projects.

## IX. FINANCIAL ARRANGEMENTS

49. The common activities under the plan of action shall be financed through contributions from the participating Governments and international organizations, the private sector and other support sources.

50. For the implementation of the plan of action account should be taken of technical and financial assistance from UNEP, the Global Environment Facility (GEF) and other international organizations working in the sphere of the environment; contributions from the more developed coastal States participating in the plan; the international financial organizations and possible donors from the private sector and other States with an interest in the plan and/or its activities.

51. The United Nations system shall, in principle, provide financial support for the preparation, implementation and initiation of the action plan. This support will gradually be scaled down as the Governments of the region begin to take financial responsibility for the plan of action and the plan itself gains greater financial autonomy.

#### Specific sources of financing

52. Funding for activities under the plan of action may come from the following sources:

- (a) Contributions from the Governments participating in the plan of action and signatories to the agreement;
- (b) Contributions additional to those indicated above from the countries participating in the plan of action;
- (c) Contributions from States that support the plan of action, but do not participate in it;
- (d) Support from the United Nations through UNEP and other organizations such as FAO, UNESCO, IMO, WHO and ECLAC, through the funding of projects and specific activities;
- (e) Support from the private sector for specific activities;
- (f) Support from regional and international organizations that are not part of the United Nations system, for example, the Organization of American States (OAS) and the European Community, for the funding of specific projects; and
- (g) Any other source of funding agreed on by the Governments participating in the plan of action.

#### Funding mechanisms

53. In order to channel the contributions of Governments and those of international organizations, as well as other contributions, the Governments participating in the plan of action agree to the establishment of two parallel mechanisms for contributions to fund the implementation of activities under the plan of action and the channels of coordination:

- (a) A trust fund for the north-east Pacific for common costs (coordination, administration, meetings, etc.) and the costs of projects and programmes agreed by the intergovernmental meetings; and
- (b) Contributions for specific projects, agreed to as part of the plan of action, such as special allotments for common costs, assessment components, and environmental and legal management under the plan.

54. At the first intergovernmental meeting under the plan of action, Governments shall establish the amount of the trust fund and the scale of the annual contributions of Governments to the trust fund. At the same time, they shall approve the regulations for its management.

#### Administration of financial resources

55. The regional coordinating unit shall be responsible for administering the financial resources of the plan of action and, in particular, the trust fund. (FF/North-East Pacific)



## X. SUPPORT MECHANISMS

56. The institutions designated by Governments to participate in activities under the plan shall, as far as they are able, provide facilities for the implementation of the joint coordinated specific programmes and activities under the plan of action.

57. The coordinated programmes and projects drawn up in the course of the development and implementation of the components of the plan of action (environmental assessment, environmental management and the legal and institution-building component) shall include adequate provision for training of staff. For this purpose the following should be taken into consideration:

- (a) Holding of workshops, seminars, courses on specific issues and aspects;
- (b) Possibility of short courses, internships, and seminars held in countries, particularly the States participating in the plan of action that possess greater capabilities;
- (c) Access to other initiatives in the region, mainly the plans of action of the Caribbean, the south-east Pacific and the upper south-west Atlantic (when adopted) and other organizations operating in the sphere of the marine and coastal environment of the region; and the regional components of the Global Programme of Action for the Protection of Coastal [and] Marine Areas [and] Associated Freshwater Environments from Pollution from Land-based Activities[;]
- (d) Study grants to train personnel from specific institutions, inside and outside the region.

58. The effectiveness of the measures that may be adopted for the protection of the marine environment, coastal areas and freshwater environments will not be achieved without the complete support and cooperation of those actors whose activities may have an impact on the marine and coastal environment and associated freshwater systems. For that reason, adequate resources will be set aside to maintain the common programmes and activities at a high level of sustainability over time, and to guide publicity and awareness-raising campaigns. Environmental concepts should also be included in educational curricula and use should be made of any other means that might help to increase general knowledge of environmental problems and the wider perception of oceans as an element sustaining the life of the planet and regulating global climate.

## XI. MISCELLANEOUS PROVISIONS

### Adoption of the plan of action

59. The plan of action shall be adopted at an intergovernmental meeting convened by one of the Governments of the region, with the support of UNEP, after a meeting of experts to revise the draft plan and to recommend its adoption. This meeting of experts should also be convened by UNEP, in consultation with one of the Governments of the region. Representatives of international agencies that have shown readiness to support the plan of action should be present at these meetings, as well as representatives from, among other bodies, the private sector and non-governmental organizations. The plan will form an integral part of the proceedings of the intergovernmental meeting that will adopt the plan and sign the agreement.

60. After its adoption by Governments, the implementation phase of the plan will begin, comprising the establishment of the regional coordinating unit, the preparation of draft priority programmes, the preparation of the draft budget, the determination of the amount of the contributions from Governments to the trust fund, the designation of national coordinating centres and the organization of basic studies and training, including development of the legal component [and] the establishment of institutional networks to set the programmes in operation, leading the way to the operational phase of the programmes under the plan..

## Annex 1

**WORK PROGRAMME OF THE PLAN OF ACTION FOR THE PROTECTION AND  
SUSTAINABLE DEVELOPMENT OF THE MARINE AND COASTAL AREAS  
OF THE NORTH-EAST PACIFIC**

**2001-2006**

The present work programme has been designed to support activities by the Governments of the region in their efforts to reduce, avoid and control pollution and degradation of the marine environment, coastal areas and associated freshwater systems of the north-east Pacific. This work programme forms part of the operative component of the plan of action for the protection and sustainable development of the marine and coastal environment of the north-east Pacific, and will support the systematization and practical implementation of the convention for the protection and sustainable development of the marine and coastal areas of the north-east Pacific. The work programme is also based on the objectives of the north-east Pacific regional component of the Global Plan of Action for the Protection of the Marine Environment from Land-based Activities and endeavours to reflect as closely as possible national suggestions which are of regional scope, as proposed by national experts at the second session of the meeting of high-level government-designated experts for the proposed north-east Pacific regional seas programme, held in Managua, Nicaragua, from 19 to 23 March 2001. The work programme was discussed and approved, with amendments, at the second session referred to above. The present work programme is a component part of the document of the plan of action for the protection and sustainable development of the marine and coastal areas of the north-east Pacific.

**Content**

On the basis of national information contained in the regional assessment of land-based activities in the north-east Pacific and on the respective national assessments, as well as identified gaps in the information and recommended priority activities and information relating to activities and projects under way or already completed at the subregional and national levels, the 2001-2006 work programme includes those activities which appear suitable to form part of the regional plan of action for the period 2001-2006, as considered, discussed and approved at the above-mentioned second session of the meeting of high-level experts. These activities may be supplemented, changed and/or amended, in accordance with the wishes of the countries.

**Proposed activities 1/**

At its second session, held in Managua from 19 to 23 March 2001, the meeting of high-level government-designated experts for the proposed north-east Pacific regional seas programme considered the proposed plan of activities and prioritized the proposed activities as follows: Establishment of a coordinating unit for the work programme; inventory of marine pollution sources and activities; elaboration and development of a regional programme to support the management of marine pollution caused by household waste water; social and economic assessment of the effects of the pollution and degradation of the marine environment, coastal areas and associated freshwater systems by land-based sources and activities; regional programme to support the management of marine pollution from agricultural sources and activities (nutrients) and reduction of sedimentation in coastal and marine areas; regional programme to support integrated coastal area management and to set up a regional information clearing house on land-based sources and activities. These activities are described in greater detail below.

**1. Strengthening and creation of regional capacity**

**Objective:** To support the creation and strengthening of regional capacity at appropriate levels for the provision of technical assistance to control, reduce and avoid the degradation of the marine environment, coastal areas and associated freshwater systems, through a specific and appropriate mechanism for channelling assistance and mobilizing international experience and support for the region and coordinating the activities.

**Goals:**

- (a) [please adjust] Creation of a regional mechanism and/or a north-east Pacific regional coordinating unit;
- (b) Preparation of the directory of marine and environmental institutions of the north-east Pacific;
- (c) Establishment of the regional network of institutions.

**Activities:**

- Intergovernmental consultations;
- Headquarters agreement;
- Agreement on financial and institutional arrangements;
- Design of forms, survey and preparation of the directory;
- Design and proposal and establishment of a regional network of institutions to operate in the north-east Pacific.

**Planned duration:** Six months.

**2. Creation and approval of a regional legal framework specifically designed for the protection of the marine and coastal environment and associated freshwater systems from marine pollution originating from land-based sources and activities**

**Objective:** To promote a legal framework for the joint regional activities needed to control, reduce and avoid the deterioration of the marine environment and coastal areas and associated freshwater systems due to pollution from land-based sources and activities.

**Goals:**

- (a) Regional legal instrument in the form of an additional protocol to the regional convention;
- (b) Document on foundations for harmonizing national regulations on marine pollution from land-based activities.

**Activities:**

- Preparation of the draft negotiating instrument, based on regional economic, social and environmental characteristics;
- Preparation of foundations for harmonizing existing national regulations - legal instrument;
- Planning and conduct of a negotiating process including at least two consultation meetings at the level of technical and legal experts and one meeting for approval and signature.

**Duration:** One and a half years.

**3. Setting up an information system on pollution from land-based sources and activities**

**Objective:** Supporting and enhancing capacity in the region to access and exchange information on pollution and other forms of deterioration of the marine environment which could be used by Governments of the region in their local, national [and] regional policies on the marine and coastal environment.

**Goals:**

- (a) Establishing the PANORINFO regional information clearing house;
- (b) PANORINFO databases and clearing house;
- (c) Bulletins, newsletter;
- (d) Web page;
- (e) Training at the appropriate levels (16 experts from the region).

**Activities:**

- Meeting of technical experts to study the basis for the design of the regional clearing house;
- Agreement on formats and procedures;
- Regional course on the use of international environmental clearing houses, data storage and processing systems, the creation of databases, etc.;
- Provision of data;
- Creation of the database (choice of standardized systems);
- Design and creation of a Web page.

**Duration:** One year.

**4. Inventories of sources of marine pollution in the north-east Pacific region**

**Objective:** Updating and enhancing understanding [of the] scale of marine and coastal pollution in the region and formulating a proposed basis of comparison for the preparation of forecasts and identification of trends on which appropriate management measures could be based.

**Goals:**

- (a) Updated inventory of sources of marine pollution in the region;
- (b) Updated analysis of marine pollution;
- (c) Training at the appropriate levels (for 16 experts from the region).

**Activities:**

- Design and consideration of survey questionnaires;
- Regional course on the use of formulae for estimating pollution;
- Conducting surveys and collating information;
- Preparing and evaluating information and producing a regional analysis.

**Duration:** Six months

**5. Social and economic assessment of the effect of pollution on the marine environment and coastal areas and associated freshwater systems from land-based sources and activities**

**Objective:** To determine the social and economic dimension of the social and economic effect of pollution on marine and coastal areas and associated freshwater systems from land-based sources and activities.

**Goals:**

- (a) Conducting at least five case studies involving assessment of the social and economic effects of pollution in the north-east Pacific;
- (b) Developing a methodology for the dissemination of experience to other parts of the region;
- (c) Training at appropriate levels (16 experts from the region).

**Activities:**

- Identification of five areas for the conduct of case studies;
- Working meeting to agree on and harmonize criteria and adopt a methodology and uniform techniques to be applied in the case studies;
- Setting up national teams to carry out the case studies;
- Collecting, selecting and evaluating information and applying the evaluation techniques;
- Regional seminar-workshop on the outcome of the national case studies, identifying difficulties encountered and solutions adopted and making policy recommendations.

**Duration:** Eight (8) months.

6. Regional programme to support integrated coastal area management in the north-east Pacific

**Objective:** To support and encourage with technical assistance at the appropriate levels national activities and initiatives designed to control and reduce marine pollution which promote community participation and an integrated approach to the management of pollution of the marine environment and coastal areas and associated freshwater systems of the north-east Pacific from land-based sources and activities.

**Goals:**

- (a) Draft regional programme to support integrated coastal area management in the north-east Pacific;
- (b) Conduct of eight (8) case studies, one for each country, on ICAM;
- (c) Development of a procedure for disseminating the experience gleaned from successful case studies, as appropriate;
- (d) Promoting ways of supporting and facilitating ICAM in the region;
- (e) Training of experts (32 experts from the region).

**Activities:**

- Preparing a draft regional programme to support integrated coastal area management in the north-east Pacific;
- Meeting of experts to review and adopt the draft regional programme to support ICAM in the north-east Pacific and identify areas for the conduct of national case studies where ICAM is necessary and to recommend a strategy designed to facilitate implementation of the programme to support Governments in their efforts to promote ICAM or where community participation is substantial;

- Conduct of a workshop-course on ICAM using techniques and methodology for ICAM, with a special focus on the uses of geographical information systems, taking due account of experience already available in the region;
- Collecting and analysing the necessary information for the eight case studies and administrative agreements with local authorities and interested groups, including the conduct of workshops and holding of working meetings at the local and national level;
- Regional seminar-workshop on ICAM, based on the outcome of the national case studies, with recommendations on ways of disseminating the information at national and regional levels.

**Duration:** Three (3) years.

## **7. Regional programme to support the sustainable integrated management of catchment areas which drain into the north-east Pacific**

**Objective:** To support national activities relating to the and sustainable integrated management of highly disrupted catchment areas in the north-east Pacific

### **Goals:**

- (a) Preparation of eight national plans for catchment areas (area) draining into the north-east Pacific which have been highly disrupted;
- (b) A regional inventory of disrupted catchment areas;
- (c) National reports on disrupted catchment areas;
- (d) Regional analysis of highly disrupted catchment areas;
- (e) Regional handbook for the integrated management of highly disrupted catchment areas of the north-east Pacific;
- (f) Social and economic assessment of the effects of managing the disrupted catchment areas of the north-east Pacific;
- (g) Expert meetings on the management of catchment areas;
- (h) Training of national experts at the necessary levels (20 experts);
- (i) Handbook for environmental audits in the sustainable management of catchment areas;
- (j) Regional seminar.

### **Activities:**

- Inventory of highly disrupted catchment areas in the north-east Pacific: preparation of forms and instructions for the preparation of national reports;
- Preparation of the regional analysis on the condition of the catchment areas draining into the Pacific;
- Social and economic assessment of the effects of managing highly disrupted catchment areas;
- Seminar-workshop to propose a regional and national strategy to guide decisions to place catchment areas under special management because of the extent to which they have been disrupted;

- Preparation of the environmental management handbook - based on the use of water and its pollution for disrupted catchment areas under special management;
- Expert meeting to revise the draft handbook on the conduct of environmental audits in catchment areas which have been placed under special management;
- Regional course on the use of techniques and methods for the management of catchment areas linked to the marine and coastal areas of the north-east Pacific;
- Preparation of a handbook for the conduct of environmental audits on the sustainable management of catchment areas directly linked to marine and coastal areas;
- Regional seminar on the environmental management of catchment areas directly linked to the coastal and marine areas of the north-east Pacific, based on experience gained in using the handbook.

**Duration:** (3) years.

## **8. Programme to support monitoring and control of marine pollution in the north-east Pacific from land-based sources and activities**

**Objective:** To provide highly reliable good-quality information on marine pollution which is easy to replicate, exchange and compare and which can be incorporated in global programmes on marine pollution and used as the starting point for the development and design of specific programmes, plans and activities and [in which] countries can find a high-quality resource on which their decisions relating to the quality of the marine environment can be based.

### **Goals:**

- (a) Training at appropriate levels, in the form of courses on analytical techniques for metals and pesticides and another on analytical techniques for petroleum hydrocarbons (60 experts)
- (b) Adoption of joint measures to ensure the replicability and exchange of information;
- (c) Providing a quality control programme.

### **Activities:**

- Design and implementation of three regional training courses in, first, use of analytical techniques for the identification of heavy metals and pesticides; second, petroleum hydrocarbons; and, third, pathogenic microorganisms with health-related effects;
- Preparation and installation of an analytical quality control programme (one laboratory per country);
- Appropriate supply of standards and freeze-dried samples and reference materials for the calibration of equipment;
- Supply of technical handbooks and analytical methods for the monitoring and observation of pollution (Reference Methods developed by the regional seas programme);
- Design and implementation of an intercalibration and intercomparison exercise (one exercise) eight intercalibrated laboratories);
- Expert meeting to adopt uniform analytical methods, including the analytical quality control programme and agreement on technical report formats;
- Expert meeting to adopt an analytical observation programme on marine pollution by heavy metals, pesticides, petroleum hydrocarbons and pathogenic organisms in critical areas of the north-east Pacific;
- Conduct of monitoring and observation exercises;
- Preparation and production of annual reports;
- Preparation of regional profiles on [...] special pollutants and sources of pollution.

**Duration:** Preparatory phase (1) year, converting into an annual routine (observation) programme

## **9. Regional programme to support the management of marine pollution from household sources**

**Objective:** Supporting and assisting Governments with the formulation of national plans for the control and reduction of marine pollution of the north-east Pacific from household sources

### **Goals:**

- (a) Preparation of eight (8) national plans for the control and reduction of marine pollution from household sources;
- (b) Preparation of three (3) case studies on integrated waste management;
- (c) Reduction of the pollutant load entering the N/E P from this source in line with the goals and objectives identified in the proposed protocol;
- (d) Training at the level of technical experts in the treatment of waste water to be discharged into the sea (32 experts);
- (e) Two awareness-raising and publicity campaigns on the benefits of reducing pollution (two in each country) in priority marine and coastal areas;
- (f) Campaigns (2) to promote the separation and sorting of refuse and solid waste dumped in the sea;
- (g) Environmental auditing handbook on household sources of marine pollution and course, 16 experts;
- (h) Regional seminar-workshop on the integrated management of wastes in the marine and coastal areas of the north-east Pacific.

### **Activities:**

- Meeting of experts to adopt a strategy leading to the preparation of national plans for the control and reduction of marine pollution from land-based sources and where appropriate taking due account of the experience gained in other regions, notably the Caribbean and south-east Pacific;
- Design and implementation of two regional courses on appropriate waste water treatment systems which are compatible with the social and economic characteristics of the region and another course on the preparation of water quality control standards, taking into account the setting of standards based on emission factors and standards based on discharge limits, the latter to be based on toxicity criteria;
- Expert-level meeting on the identification, selection and recommendation to Governments of the use of appropriate technologies for the final disposal of waste water and solid wastes and sludges;
- Preparation and conduct of three case studies on the integrated management of wastes in coastal and marine areas;
- Motivation campaigns directed at municipal authorities to encourage the adoption of municipal waste water treatment methods (campaigns);
- Preparation of a handbook on environmental auditing [and] the control of marine pollution from land-based sources and course on theory where use of the handbook is important;



- Regional seminar-workshop based on national experience in integrated waste management and for the design and recommendation of a long-term expanded programme for integrated waste management in the coastal and marine areas of the north-east Pacific.

**Duration:** (3) three years.

**10. Specific regional programme to support the management of marine pollution from agricultural sources and activities (nutrients and POPs) and reduction of sedimentation in the coastal areas of the north-east Pacific**

**Objectives:** To support Governments in their efforts to reduce the pollution of their catchment and marine areas caused by overuse of pesticides and fertilizers and by activities in those areas and to reduce the high sedimentation loads in the coastal and marine areas of the region.

**Goals:**

- (a) Draft regional programme of support to Governments in dealing with marine pollution caused by agricultural activities (nutrients, POPs) and reducing sedimentation in coastal areas of the north-east Pacific;
- (b) Support for the drawing up of 8 (eight) national plans for the reduction and control of marine pollution caused by agricultural activities in the north-east Pacific;
- (c) Regional analysis of areas at high risk of pollution and erosion, based on national reports;
- (d) Eight (8) national reports on the state of the marine environment and coastal and catchment areas linked by agricultural activities;
- (e) Encouraging the use of appropriate technology, including the integrated use of agricultural products and use of organic fertilizers and promotion of crops with soil-formative agents and substitution of pesticides and other inputs harmful to the environment;
- (f) Training of 16 national experts in the use of techniques and methods of reducing marine pollution caused by agricultural activities;
- (g) Preparation of a handbook on environmental auditing for agricultural practices in the north-east Pacific and a course for 16 experts.

**Activities**

- Meeting of experts to review and approve the draft regional programme of support and to agree on a strategy that will lead to the formulation of national plans for the management and reduction of marine pollution caused by land-based activities. This strategy must be based on national plans for agricultural and rural development, national food policies and national maritime and environmental policies;
- National analyses (8) of areas badly affected by marine pollution caused by agricultural activity, and of the related catchment areas;
- Preparation of national plans for the management and reduction of marine pollution caused by agricultural activities;
- Preparation of a handbook on the best techniques and methods recommended for use within the countries in their programmes and plans for reducing pollution and controlling soil erosion caused by deforestation and agricultural activities;
- Regional training course in the use of techniques and methods for reducing agricultural pollution;

- Preparation of a handbook on environmental auditing;
- Theoretical and practical course [in] the use of the environmental auditing handbook in managing marine pollution caused by agricultural activities in the coastal and marine areas of the north-east Pacific;
- Regional seminar-workshop on the assessment and management of marine pollution caused by agricultural activities in the north-east Pacific, with a view to formulating an expanded long-term programme for the management of marine pollution caused by agricultural activities in the north-east Pacific.

**Duration:** (3) three years

#### **11. Specific regional support programme for the management of marine pollution caused by industrial activities and sources in the north-east Pacific**

**Objective:** To support national activities and encourage them, at appropriate levels, to reduce and control marine pollution caused by industrial sources in the north-east Pacific.

##### **Goals:**

- (a) Regional support programme for Governments in reducing marine pollution caused by industrial activities in the north-east Pacific;
- (b) Regional strategy to support the formulation of national plans aimed at the reduction of marine pollution caused by industrial activities in the north-east Pacific;
- (c) Reduction in the pollutant load by industry located along the coasts, in conformity with environmental goals to be agreed on within the context of the specific regional protocol;
- (d) Replacement of highly polluting obsolete processes and gradual incorporation of clean technologies in conformity with the substitution programmes to be agreed on within each Government in accordance with its own environmental policies;
- (e) Training at appropriate levels in the treatment of wastes, especially in the food industry, with special emphasis on the fishing industry, training course for 32 experts;
- (f) Training in the use of international environmental standards as applied to industry (ISO 9000, etc.), 16 national experts;
- (g) Handbook on environmental auditing for coastal industries, course for 16 experts.

##### **Activities**

- Meeting of experts to review and approve the draft regional support programme for Governments in reducing marine pollution caused by industrial activities and to review the draft regional strategy to support the formulation of national programmes connected with the reduction of marine pollution from industrial sources, giving due attention to the options of substitution and/or modification of processes, use of installed capacity, substitution of hazardous primary materials, recycling of waste products, integrated waste management and incentive policies and promotion of environmentally friendly activities;
- Two regional courses on the treatment of industrial effluents, especially those emanating from the food industry, and on the application of environmental standards ISO 6000 and 1400, etc.;
- Formulation of national programmes for the reduction and control of marine pollution caused by industrial effluents;

- Design and execution of two campaigns to raise public awareness of marine pollution caused by industrial sources;
- Preparation of a handbook on environmental auditing applied to the management of marine pollution by coastal industries;
- Course on the use of the environmental auditing handbook in managing marine pollution caused by industrial activities in the coastal areas of the north-east Pacific

**Duration:** three (3) years

## **12. Support programme for the management, protection and sustainable use of the mangrove ecosystem in the north-east Pacific**

**Objectives:** To assist Governments in their efforts to protect biodiversity and ecosystems from marine pollution from land-based sources and activities, with emphasis on mangroves and other related environments

### **Goals:**

- (a) Restoration of eight disrupted mangrove areas through specific management measures applied by the countries of the region;
- (b) Integrated regional inventory of the mangroves of the north-east Pacific;
- (c) Training at appropriate levels (course on the use of management techniques applied to the mangrove ecosystem);
- (d) Campaigns to promote public awareness and to disseminate knowledge of the sustainable use of mangroves (two campaigns);
- (e) Handbook on the management and use of the mangrove ecosystem in the north-east Pacific;
- (f) Brochures for fishing communities and other mangrove users on the use of the mangrove ecosystem and other educational material;
- (g) Seminar-workshop on the management and sustainable use of the mangrove ecosystem.

### **Activities:**

- Integrated national inventories on the mangrove ecosystem;
- North-east Pacific regional inventory on the state of mangrove conservation in the north-east Pacific, identifying critical areas and trends in mangrove deforestation and identifying the principal causes and methods of recovery currently being used;
- Meeting of experts to recommend a regional strategy to support Governments in formulating and applying mangrove management plans, with emphasis on reducing the causes of their deterioration and on the practical application of recovery methods;
- Selection of eight areas to be used in case studies in which management methods are applied and integrated and sustainable mangrove management practices are important;
- Regional course on techniques and methods for the sustainable management of the mangrove ecosystem in the north-east Pacific;
- Seminar. Regional workshop on the sustainable management of the mangrove ecosystem, based on national experience.

**Duration:** two (2) years

### **13. Regional programme to support the sustainable environmental management of tourism and to promote ecotourism in the coastal and marine areas of the north-east Pacific**

**Objective:** To deepen understanding of diversity through managed long-term access to the protected coastal and marine areas of the north-east Pacific, in the context of ecotourism and in accordance with national conservation and development policies

#### **Goals:**

- (a) Eight national analyses of the environmental situation of the coastal and marine areas subject to intensive use for tourism in the north-east Pacific;
- (b) Programme to support Governments in the environmental management of tourism in the marine and coastal areas of the north-east Pacific;
- (c) Training at appropriate levels in the environmental management of tourism in the coastal and marine areas of the north-east Pacific;
- (d) Training at appropriate levels in the environmental management of tourist activity in coastal and marine areas and a workshop course on the application of management methods to tourism in the coastal and marine areas of the north-east Pacific;
- (e) Management handbook on tourist activities in the protected coastal and marine areas of the north-east Pacific;
- (f) Regional strategy to include management measures for tourist activities in the coastal and marine areas of the north-east Pacific;
- (g) Workshop on strategic partnerships, the joint management of areas and community participation in managing tourist activities in coastal and marine areas of the north-east Pacific;
- (h) Handbook for use in environmental audits on tourist activities in coastal and marine areas;
- (i) Regional network of coastal and marine protected areas with a tourism component.

#### **Activities:**

- Preparation of eight (8) national analyses of the environmental situation in coastal and marine areas with intensive tourist activity;
- Formulation of a draft regional programme of support for Governments in the environmental management of tourism in the coastal and marine areas of the north-east Pacific;
- Meeting of experts from the environmental and tourism sectors to design and recommend a regional strategy to support the application of management measures to tourism in the marine and coastal areas of the north-east Pacific;
- Meeting of experts to identify and select management measures which should be applied to tourism in the protected coastal and marine areas of the north-east Pacific;
- Regional workshop course for training in the application of environmental management measures to tourism in coastal and marine areas of the north-east Pacific;
- Meeting of experts to recommend a strategy oriented towards the inclusion of environmental management measures in sustainable tourism in the coastal and marine areas and to encourage ecotourism in the north-east Pacific in accordance with national plans for the development of tourism;

- Regional workshop to examine the options of town-twinning, co-management and strategic community partnerships for the environmental management of tourism in the coastal and marine areas of the north-east Pacific;
- Preparation of a handbook on tourism management in protected coastal and marine areas of the north-east Pacific;
- Course in the theory and practice of using the handbook on the management of ecotourism in protected coastal and marine areas of the north-east Pacific

**Duration:** (6) six months

#### **14. Support programme for the sustainable environmental management of coastal aquaculture, with special emphasis on shrimp farming in the north-east Pacific**

**Objectives:** To design, examine and apply management measures for the sustainable environmental management of coastal aquaculture in the north-east Pacific, with special emphasis on the farming of sea shrimps.

##### **Goals:**

- (a) Meeting of experts on critical areas for the development of coastal aquaculture in the north-east Pacific region;
- (b) Country studies (eight) of the environmental situation of shrimp aquaculture in the north-east Pacific, with recommendations for its management using the "ecosystem approach";
- (c) Four case studies on the joint management of coastal aquaculture enterprises with community involvement, applying management using the ecosystem approach;
- (d) Map of critical areas for the development of shrimp aquaculture in the north-east Pacific;
- (e) Handbook on environmental auditing of coastal aquaculture in the north-east Pacific;
- (f) Training of 16 experts in the environmental management of aquaculture;
- (g) Seminar workshops (2).

##### **Activities:**

- Preparation and organization of eight specific country studies on the environmental situation of shrimp farming (both the area it covers and the magnitude of the effects it produces);
- Preparation of a regional analysis of the environmental situation of shrimp farming, with specific recommendations on how it should be managed;
- Meeting of experts to identify and select areas at high risk environmentally as a result of the development of shrimp farming;
- Seminar-workshop on the application of the "ecosystem approach" with regard to coastal aquaculture, with special emphasis on marine shrimp farming in the north-east Pacific;
- Preparation of a regional atlas of critical areas, from an environmental point of view, for the development of shrimp farming;
- Regional course on the use of techniques and methods for the management of coastal aquaculture using the ecosystem approach, with special emphasis on marine shrimp farming in the north-east Pacific;
- Preparation of a handbook on environmental auditing of the activities of coastal aquaculture;

- Theoretical and practical course in the use of the handbook on environmental auditing of the management of sustainable farming in the north-east Pacific using the ecosystem approach, a workshop in areas where use of the handbook may be important;
- Regional seminar-workshop on the sustainable environmental management of marine shrimp farming in the north-east Pacific, following the principle of the "ecosystem approach".

**Duration:** (One) year

## **15. Programme of support for environmental management in ports and port activities in the north-east Pacific**

**Objective:** To support the port authorities of the Governments of the region in the design and implementation of environmental management measures for ports in accordance with their own capabilities and necessities and local maritime, port and environmental policies.

### **Goals:**

- (a) Environmental management plans for port terminals in eight countries (eight ports);
- (b) Regional analysis of the environmental situation in ports and port terminals in the north-east Pacific;
- (c) Maps of critical areas, vulnerable resources and priority areas for protection against accidental oil pollution in ports;
- (d) Training in the use of emergency equipment, at appropriate levels of expertise (48 experts);
- (e) Meetings of experts on the ports of the north-east Pacific;
- (f) Handbook on environmental auditing at port level and the training of eight experts.

### **Activities:**

- Meeting of experts (port authorities) for the selection of ports [and] identification of areas at high risk, type of commodities handled, volume. Fire control systems, emergency systems in the various ports, etc.;
- Drawing up of a regional analysis on the environmental situation of ports and port terminals in the north-east Pacific;
- Design and drawing up of environmental management plans for ports, with specific recommendations for the reduction of environmental risks;
- Drawing up of maps of critical areas, vulnerable resources and priority areas for protection against accidental oil pollution in ports;
- Course on application of the APELL approach in emergency situations in ports;
- Application of environmental impact assessment procedures and techniques for ports and port activities (16 experts), with emphasis on maintenance dredging and pollution;
- Course on the use of international systems for compensation and claims for marine pollution by oil (16 experts);
- Regional course on the use of EIA techniques and methods applied to ports, port terminals and port activities in the north-east Pacific;
- Course on the use of material and equipment for application in accidental oil pollution in ports in the north-east Pacific and the use of information and notification systems, with a simulation exercise;
- Preparation of a handbook on the conduct of environmental auditing in ports and port terminals in the north-east Pacific;

- Course on the theory and practice of the use of the handbook on environmental auditing for ports and port activities in the north-east Pacific.

**Duration:** Two (years)

#### **16. Regional support programme for the prevention of natural disasters and reduction of their impact in the north-east Pacific region**

**Objective:** To assist the Governments of the region in the prevention of natural disasters originating in coastal and marine areas and in the identification and adoption of appropriate measures to reduce the impact of such disasters on marine and coastal ecosystems and on the coastal population, in a way that will improve and enhance the capacity of the countries in the region to respond to such situations.

##### **Goals:**

- (a) Eight (8) national maps of coastal and marine areas of the north-east Pacific that are highly vulnerable to natural disasters originating in the Pacific;
- (b) Eight (8) computer models of the areas most vulnerable to tsunami disasters;
- (c) Strengthening of national plans for addressing and preventing natural disasters at levels appropriate to the marine and coastal dimensions of such plans;
- (d) Raising of awareness of the risks;
- (e) Training at appropriate levels.

##### **Activities:**

- Workshop for the selection and recommendation of techniques and methods for evaluating the impact of natural disasters on the coastal and marine ecosystems of the north-east Pacific;
- Preparing and issuing eight national maps of areas highly vulnerable to natural disasters, especially tsunamis of local origin, and areas displaying special conditions conducive to landslides and identification of coastal human settlements in high-risk areas or in areas vulnerable to the effect of ocean-atmosphere interaction phenomena, especially storms, hurricanes and the El Niño Phenomenon;
- Preparing and calibrating computer models for tsunamis in highly vulnerable areas;
- Meeting of experts to agree on and design a regional strategy to support national programmes to prevent and address natural disasters in highly vulnerable coastal and marine areas;
- Regional course on computer modelling of tsunamis;
- Preparation of booklets, handbooks, guides and other explanatory material.

**Duration:** (3) three years

#### **17. Regional programme for identifying, selecting, examining and recommending sustainability indicators for the assessment and environmental management of the marine, coastal and associated freshwater environment of the north-east Pacific**

**Objective:** To identify, examine, propose and recommend environmental sustainability indices and indicators for the countries of the north-east Pacific region, for the assessment and environmental management of the marine environment, coastal areas and associated freshwater systems of the north-east Pacific.

**Goals:**

- (a) Environmental sustainability indicators for the coastal and marine areas of the north-east Pacific;
- (b) Biological responses as early warnings of environmental stress in the coastal and marine ecosystems of the north-east Pacific;
- (c) Training at appropriate levels, a course for the identification and selection of environmental indicators;
- (d) Handbook on the use, verification and evaluation of environmental indicators for the marine and coastal areas of the north-east Pacific.

**Activities:**

- Seminar course on the use of environmental indicators as applied to the marine and coastal environment of the NEP;
- Seminar-workshop on the selection of biological indicators and selection of biological responses as environmental indicators and early warning alerts in the north-east Pacific;
- Preparation of a handbook on the use and application of sustainability indicators in the north-east Pacific;
- Meeting of experts to design and recommend a strategy for the national application of environmental indicators on the marine environment and coastal areas of the north-east Pacific, and their relation to national resource accounting and environmental accounting;
- Design of a programme to evaluate and verify the environmental indicators selected for the north-east Pacific;
- Seminar workshop on the use and the consequences of applying the environmental indicators on the marine and coastal environment of the north-east Pacific;
- Handbook on the conduct of environmental auditing, using the environmental sustainability indicators of the marine environment and coastal areas of the NE/P.

**Duration:** Three (3) years



## Tentative timetable of approved activities

The following tentative timetable is indicative and has been prepared on the basis of the conclusions reached at the second session of the meeting of high-level government-designated experts for the proposed north-east Pacific regional seas programme, held in Managua, Nicaragua, from 19 to 23 March 2001, and forms an integral part of the plan document. The activities have been set out according to the criteria and priorities approved at that meeting, on the understanding that the order of priorities is not inflexible and can be modified in the light of resources and needs.

| Proposed activities  | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 |
|--|------|------|------|------|------|------|
| <b>1. Capacity-strengthening</b>   |      |      |      |      |      |      |
|  |      |      |      |      |      |      |
| Establishment of a regional coordinating unit for the implementation of the operational programme of the regional plan of action and the work programme of the regional component of the Global Programme of Action (consultations with Governments) |      |      |      |      |      |      |
| Drawing up of the regional directory of institutions and environmental and marine centres within the north-east Pacific region (preparation of forms, compiling of information and preparation of the directory)                                     |      |      |      |      |      |      |
| Design and establishment of the regional network of institutions to operate the PANORI work programme  |      |      |      |      |      |      |
|  |      |      |      |      |      |      |
| <b>2. Inventory of sources of marine pollution in the north-east Pacific</b>   |      |      |      |      |      |      |
|  |      |      |      |      |      |      |
| Designing survey instructions and forms  |      |      |      |      |      |      |
| Drawing up of national inventories - national reports  |      |      |      |      |      |      |
| Preparing the consolidated regional report   |      |      |      |      |      |      |
| Workshop course on the use of formulae for the rapid estimation of pollution   |      |      |      |      |      |      |
|  |      |      |      |      |      |      |
| <b>3. Creation and development of a regional support programme to manage marine pollution caused by domestic sewage</b>  |      |      |      |      |      |      |
|  |      |      |      |      |      |      |
| Meeting of experts to recommend a strategy which would allow the formulation and drawing up of eight national plans for the control and reduction of marine pollution caused by domestic sewage  |      |      |      |      |      |      |

| <b>Proposed activities</b>   | <b>2001</b> | <b>2002</b> | <b>2003</b> | <b>2004</b> | <b>2005</b> | <b>2006</b> |
|--|-------------|-------------|-------------|-------------|-------------|-------------|
| Design and organization of two regional courses on treatment systems for domestic sewage in coastal areas and on the creation of water quality control standards, bearing in mind the development of criteria governing coastal water quality based on emission factors and on discharge limits, as well as on the use of the criterion of toxicity for the establishment of strict [...] standards, taking into consideration the social and economic characteristics of the region |             |             |             |             |             |             |
| Preparation and launching of a working group to assist Governments in selecting the right technologies to use in the final disposal of waste water and solid wastes, including sludge  |             |             |             |             |             |             |
| Preparation and implementation of three national case studies on integrated waste management in coastal and marine areas of the north-east Pacific   |             |             |             |             |             |             |
| Preparation and implementation of motivation campaigns at municipal authority level to encourage the adoption of methods for treating municipal waste water, and the forming of strategic alliances with the same aim  |             |             |             |             |             |             |
| Preparation of a seminar workshop on the integrated management of wastes based on national experience, and for the formulation of an expanded long-term programme on integrated waste management   |             |             |             |             |             |             |
| Preparation of a handbook for the carrying out of environmental audits in the control and monitoring of marine pollution stemming from domestic sources in the north-east Pacific  |             |             |             |             |             |             |
| Course on the theory and practice of the use and application of the handbook   |             |             |             |             |             |             |
|  |             |             |             |             |             |             |
| <b>4. Social and economic assessment of the impact of the pollution and deterioration of the marine environment, coastal areas and associated freshwater systems by land-based sources and activities</b>  |             |             |             |             |             |             |
|  |             |             |             |             |             |             |
| Identification and selection of five areas, creation of national working groups (case studies)   |             |             |             |             |             |             |
| Working meeting to decide on uniform criteria, techniques and methods [...] setting up of national working groups  |             |             |             |             |             |             |
| Collection, analysis and processing of information   |             |             |             |             |             |             |
| Regional seminar workshop on the results of the case studies, identification of difficulties and solutions, and discussion of findings and policy recommendations  |             |             |             |             |             |             |
|  |             |             |             |             |             |             |

| Proposed activities   | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 |
|---|------|------|------|------|------|------|
| <b>5. Regional programme to support the sound management of marine pollution from agricultural sources and activities (POPs and nutrients) and the reduction of sedimentation in coastal areas</b>  |      |      |      |      |      |      |
|   |      |      |      |      |      |      |
| Preparation of a proposed draft regional programme for the assessment and management of marine pollution from agricultural activities (nutrients and POPs) and to reduce sedimentation in coastal areas of the north-east Pacific and a proposed regional strategy to support the formulation of national plans for the management and reduction of marine pollution from agricultural activities |      |      |      |      |      |      |
| Meeting of experts to review and adopt the regional programme for the management of marine pollution from agricultural sources and to consider the strategy to support the preparation of eight national plans for the management and reduction of marine pollution from agricultural activities in the north-east Pacific  |      |      |      |      |      |      |
| Preparation of eight national analyses on critical areas of marine pollution from agricultural activities and catchment areas linked to coastal and marine areas  |      |      |      |      |      |      |
| Preparation of a handbook on best techniques and methods to be recommended for use within countries in their plans, projects and programmes on reduction of agricultural pollution, the loss of agricultural soil, reduction of the use of pesticides and fertilizers and control of sedimentation in coastal areas   |      |      |      |      |      |      |
| Regional course on the planning, control and reduction of coastal area pollution from agricultural activities, including the use of pesticides and fertilizers and the reduction of agricultural run-off  |      |      |      |      |      |      |
| Regional seminar-workshop on the assessment, control and management of marine pollution from agricultural activities in the north-east Pacific and for the preparation of an expanded long-term monitoring programme on marine pollution from agricultural activities   |      |      |      |      |      |      |
| Preparation of a handbook for the conduct of environmental audits on the control and management of marine pollution from agricultural activities including sedimentation in the north-east Pacific  |      |      |      |      |      |      |
| Theoretical and practical course on the use of the handbook of environmental audits in the environmental management of marine pollution from agricultural activities  |      |      |      |      |      |      |
|   |      |      |      |      |      |      |

| <b>Proposed activities</b>  | <b>2001</b> | <b>2002</b> | <b>2003</b> | <b>2004</b> | <b>2005</b> | <b>2006</b> |
|---|-------------|-------------|-------------|-------------|-------------|-------------|
| <b>6. Regional programme to support integrated coastal area management in the NEP</b>   |             |             |             |             |             |             |
|   |             |             |             |             |             |             |
| Preparation of a draft regional programme to support national activities geared towards the application of integrated coastal area management in the north-east Pacific   |             |             |             |             |             |             |
| Meeting of experts to review the draft regional programme and recommend a strategy geared towards application of the programme through the development of eight national case studies (one per country)   |             |             |             |             |             |             |
| Conduct of a workshop course on the use of integrated waste management techniques and methods and the use of geographical information systems applied to such management  |             |             |             |             |             |             |
| Conduct of the national case studies  |             |             |             |             |             |             |
| Seminar-workshop on integrated coastal area management based on the national case studies with recommendations for its possible long-term extension through the region  |             |             |             |             |             |             |
|   |             |             |             |             |             |             |
| <b>7. Setting up a regional clearing-house on land-based sources and activities which affect the marine environment, coastal areas and associated freshwater systems in the north-east Pacific (PANORINFO)</b>                                      |             |             |             |             |             |             |
|   |             |             |             |             |             |             |
| Meeting of experts to provide the underlying information for the design of the regional clearing-house (setting up the foundations of the system)   |             |             |             |             |             |             |
| Regional course on the use of computerized information storage and exchange systems   |             |             |             |             |             |             |
| Preparation of the regional clearing house (PANORINFO), including proposed formats for information exchange, the type of data, frequency of submission, the creation of the database and its integration with other regional and worldwide networks |             |             |             |             |             |             |
| Agreement on information sheets, a Web page, setting up the database, a newsletter, etc.  |             |             |             |             |             |             |
|   |             |             |             |             |             |             |

| Proposed activities  | 2001 | 2002 | 2003 | 2004 | 2005 | 2006 |
|--|------|------|------|------|------|------|
| <b>8. Regional programme to support the management and control of marine pollution from industrial sources and activities in the north-east Pacific</b>  |      |      |      |      |      |      |
|  |      |      |      |      |      |      |
| Preparation of a draft regional programme on the assessment and control of marine pollution in the north-east Pacific from industrial activities and the design of a regional strategy for the implementation of the programme   |      |      |      |      |      |      |
| Meeting of experts to review the draft programme and the strategy, to support the preparation of national programmes for the management and control of marine pollution from industrial activities   |      |      |      |      |      |      |
| Regional courses (two) on the treatment of industrial wastes, use of clean technologies, application of ISO international environmental standards  |      |      |      |      |      |      |
| Preparation of eight (8) national programmes for the reduction of marine pollution from industrial sources in the north-east Pacific, including, among other things, waste recycling, replacement by less polluting processes and technologies, the integrated waste management, the use of installed capacity, replacement of polluting raw materials, etc. |      |      |      |      |      |      |
| Design and conduct of two awareness-raising and motivation campaigns for the industrial sector on reducing marine pollution from industrial sources  |      |      |      |      |      |      |
| Regional seminar-workshop on marine pollution from industrial sources in the north-east Pacific  |      |      |      |      |      |      |
| Preparation and adoption of a handbook on environmental auditing in the management and control of marine pollution within industries and Governments of the north-east Pacific   |      |      |      |      |      |      |
| Theoretical and practical course on the use of the handbook  |      |      |      |      |      |      |
|  |      |      |      |      |      |      |
| <b>9. Regional programme to support the management, protection and sustainable use of the mangrove ecosystems in the north-east Pacific</b>  |      |      |      |      |      |      |
|  |      |      |      |      |      |      |
| Drawing up integrated national inventories on the status of the environmental quality of the mangrove ecosystem of the Pacific, with a view to their special protection  |      |      |      |      |      |      |

| <b>Proposed activities</b>  | <b>2001</b> | <b>2002</b> | <b>2003</b> | <b>2004</b> | <b>2005</b> | <b>2006</b> |
|---|-------------|-------------|-------------|-------------|-------------|-------------|
| Preparing the regional analysis on the status of the environmental quality of the mangrove ecosystem, based on the national analyses, including the identification of critical areas, trends in the loss of mangrove cover, and identifying recovery measures currently being applied |             |             |             |             |             |             |
| Meeting of experts to design and recommend a regional strategy to promote national plans within Governments for the management of the mangrove ecosystem, placing emphasis on efforts to reduce the causes of their deterioration and to apply recovery measures                      |             |             |             |             |             |             |
| Regional course on techniques and systems for the management and control of the deterioration and recovery of the mangrove ecosystem, including community participation techniques  |             |             |             |             |             |             |
| Selection of eight (8) areas for the conduct of case studies on the application of management measures, in which the application of integrated and sustainable mangrove management practices are important, involving the full participation of local communities                     |             |             |             |             |             |             |
| Regional seminar-workshop on the integrated management of the mangrove ecosystem, based on the experience gained in national cases and recommendations on applying positive experience in an expanded long-term programme   |             |             |             |             |             |             |
|   |             |             |             |             |             |             |
| <b>10. Programme to support the sustainable environmental management of coastal aquaculture, with special emphasis on marine shrimp farming</b>   |             |             |             |             |             |             |
|   |             |             |             |             |             |             |
| Preparation of eight national analyses on the environmental status of coastal aquaculture in the north-east Pacific, with emphasis on marine shrimp farming   |             |             |             |             |             |             |
| Regional analysis of the environmental status of the shrimp farming areas in the north-east Pacific, including recommendations on their management using the "ecosystem approach"   |             |             |             |             |             |             |
| Expert seminar-workshop on application of the concept of management using the "ecosystem approach" in coastal aquaculture with special reference to the status of the activity in the north-east Pacific  |             |             |             |             |             |             |
| Meeting of experts for the identification and selection of high-risk areas for the development of shrimp farming and assessing the potential of areas "environmentally suited to the development of this activity"  |             |             |             |             |             |             |

| <b>Proposed activities</b>  | <b>2001</b> | <b>2002</b> | <b>2003</b> | <b>2004</b> | <b>2005</b> | <b>2006</b> |
|---|-------------|-------------|-------------|-------------|-------------|-------------|
| Preparation of a regional atlas of critical and vulnerable areas for marine shrimp farming, from the point of view of environmental risk  |             |             |             |             |             |             |
| Preparation and conduct of four (4) case studies on marine shrimp farming in community enterprises where management using the application of the "ecosystem management" principle is important  |             |             |             |             |             |             |
| Regional seminar-workshop on the environmental management of marine shrimp farming in the north-east Pacific, based on the results of national cases, and preparation of a strategy to apply the successful experience on a region-wide scale                                 |             |             |             |             |             |             |
| Handbook on environmental auditing in the sustainable management of coastal aquaculture, with emphasis on marine shrimp farming   |             |             |             |             |             |             |
| Theoretical and practical course on the use of the environmental auditing handbook in the environmental management of sustainable marine shrimp farming in the north-east Pacific   |             |             |             |             |             |             |
|   |             |             |             |             |             |             |
| <b>11. Programme to support environmental management in ports, port terminals and port activities</b>   |             |             |             |             |             |             |
|   |             |             |             |             |             |             |
| Meeting of experts to select priority ports and to identify their environmental high-risk areas, port activities in terminals, the volume of dangerous goods and type handled, the location and siting of warehouses, systems for controlling fires and other accidents, etc. |             |             |             |             |             |             |
| Preparation of a regional analysis on the environmental situation of the ports of the north-east Pacific, identifying training and technical assistance needs   |             |             |             |             |             |             |
| Preparation of eight national environmental management plans for ports (port terminals), based on national port policies, expansion and modernization of the ports, including growth in port activities   |             |             |             |             |             |             |
| Training course on the application of the APELL system in emergency situations at port level  |             |             |             |             |             |             |
| Training on the application of environmental assessment impact techniques and methods to port activities, with emphasis on maintenance dredging and on pollution  |             |             |             |             |             |             |
| National courses with simulation exercises on the use of communication techniques and methods for cases of accidental oil pollution in ports  |             |             |             |             |             |             |

| <b>Proposed activities</b>  | <b>2001</b> | <b>2002</b> | <b>2003</b> | <b>2004</b> | <b>2005</b> | <b>2006</b> |
|---|-------------|-------------|-------------|-------------|-------------|-------------|
| Preparation of maps of critical areas, identification of vulnerable resources and protection priorities at port level within the contingency plans for controlling oil spills   |             |             |             |             |             |             |
| Course on the use of international systems for compensation and claims in the event of accidental oil pollution, such as LCD, FONDO, CRISTAL, P and I Clubs, TOVALOPS, etc.   |             |             |             |             |             |             |
| Preparation of an environmental auditing handbook for port activities and port terminals in the north-east Pacific  |             |             |             |             |             |             |
| Theoretical and practical course on the use of the environmental auditing handbook in ports, port terminals and port activities   |             |             |             |             |             |             |
|   |             |             |             |             |             |             |
| <b>12. Regional programme to support the sustainable environmental management of tourism in coastal and marine areas of the north-east Pacific</b>  |             |             |             |             |             |             |
|   |             |             |             |             |             |             |
| Preparation of eight national analyses of the ecotourism situation in the coastal and marine areas of the north-east Pacific  |             |             |             |             |             |             |
| Preparation of a draft programme for the environmental management of tourist activities in coastal and marine areas and support for the promotion of ecotourism in the north-east Pacific   |             |             |             |             |             |             |
| Meeting of experts to identify management measures for tourist activities and tourist sites in the coastal and marine areas of the north-east Pacific   |             |             |             |             |             |             |
| Workshop course on training in the application of environmental management measures for the sustainable management of tourism in the coastal and marine areas of the north-east Pacific   |             |             |             |             |             |             |
| Meeting of experts to recommend a strategy geared towards including environmental management guidelines in sustainable tourism in coastal and marine areas of the north-east Pacific in national plans for the development of tourism |             |             |             |             |             |             |
| Regional workshop on the possibilities of co-management, strategic partnerships and associations for the development of nature-based tourism in the coastal and marine areas and protected areas of the north-east Pacific            |             |             |             |             |             |             |
| Preparation of a handbook for the conduct of environmental auditing of tourist activities in coastal and marine areas and tourism in protected coastal and marine areas of the north-east Pacific                                     |             |             |             |             |             |             |



| <b>Proposed activities</b>  | <b>2001</b> | <b>2002</b> | <b>2003</b> | <b>2004</b> | <b>2005</b> | <b>2006</b> |
|---|-------------|-------------|-------------|-------------|-------------|-------------|
| Theoretical and practical course on the use of the handbook for environmental auditing of tourism in coastal and marine areas of the north-east Pacific   |             |             |             |             |             |             |
|   |             |             |             |             |             |             |
| <b>13. Development of a process leading to the creation and approval of a regional legal framework specifically designed for the protection of the marine, coastal and associated freshwater environment from land-based sources of pollution and land-based activities</b> |             |             |             |             |             |             |
|   |             |             |             |             |             |             |
| Preparation of a draft legal instrument based on the arrangements in existing international treaties on this matter and on the social, economic and environmental circumstances of the north-east Pacific   |             |             |             |             |             |             |
| Preparation of a comparative study of national legislation on marine pollution from land-based sources, as a basis for the process of harmonizing national regulations with the new instrument  |             |             |             |             |             |             |
| Design and implementation of a proposed process geared towards the negotiation of a regional instrument, including, as a minimum:   |             |             |             |             |             |             |
| (a) Two meetings of technical experts on marine pollution from land-based sources   |             |             |             |             |             |             |
| (b) One meeting of legal experts  |             |             |             |             |             |             |
| (c) One intergovernmental meeting for adoption, preceded by a technical segment for the analysis of pending issues  |             |             |             |             |             |             |
|   |             |             |             |             |             |             |
| <b>14. Regional programme to support the integral sustainable management of catchment areas directly linked with the coastal areas of the north-east Pacific</b>  |             |             |             |             |             |             |
|   |             |             |             |             |             |             |
| National inventories of highly disrupted catchment areas directly linked with the coastal areas of the north-east Pacific – preparation of forms and instructions for the taking of inventories and the conduct of the national inventories themselves (eight)              |             |             |             |             |             |             |
| Preparation of a regional analysis of the environmental state of the major catchment areas linked to the coastal and marine areas   |             |             |             |             |             |             |
| Workshop course on methods and techniques for the integrated management of catchment areas and coastal and marine areas   |             |             |             |             |             |             |

| <b>Proposed activities</b>  | <b>2001</b> | <b>2002</b> | <b>2003</b> | <b>2004</b> | <b>2005</b> | <b>2006</b> |
|---|-------------|-------------|-------------|-------------|-------------|-------------|
| Assessment of the social and economic impact of the integrated management of highly disrupted catchment areas directly linked to the coastal areas of the north-east Pacific  |             |             |             |             |             |             |
| Seminar-workshop to propose a regional strategy to guide decisions to place catchment areas under special management, where appropriate, in the countries participating in the north-east Pacific plan of action  |             |             |             |             |             |             |
| Preparation of an environmental management handbook, based on the use of the water, for highly disrupted catchment areas linked with the coastal areas of the north-east Pacific, with provision for the active participation of populations resident in these catchment areas. |             |             |             |             |             |             |
| Meeting of experts to consider the draft handbook and to recommend a strategy for its use within the various countries  |             |             |             |             |             |             |
| Preparation of an environmental auditing handbook for catchment areas under special management  |             |             |             |             |             |             |
| Regional seminar on the management of catchment areas and their integrated management and the integrated management of the coastal area of the north-east Pacific   |             |             |             |             |             |             |
|   |             |             |             |             |             |             |
| <b>15. Regional programme to support the monitoring and control of marine pollution from land-based sources and activities in the north-east Pacific</b>  |             |             |             |             |             |             |
|   |             |             |             |             |             |             |
| Regional course on the use of analytical techniques and methods to determine the presence of heavy metals and pesticides in marine organisms and sediments in critical areas of the north-east Pacific  |             |             |             |             |             |             |
| Regional course on ways of determining the presence of petroleum hydrocarbons dissolved or dispersed in sea water, sediments and marine organisms in critical areas of the north-east Pacific   |             |             |             |             |             |             |
| Regional course on the use of microbiological techniques to assess the health status of priority waters and shore areas of the north-east Pacific   |             |             |             |             |             |             |
| Design and implementation of an intercalibration exercise   |             |             |             |             |             |             |
| Meeting of experts for the adoption of uniform methods and techniques, including the adoption of a programme to monitor the analytical quality and the formats of reports   |             |             |             |             |             |             |

| <b>Proposed activities</b>  | <b>2001</b> | <b>2002</b> | <b>2003</b> | <b>2004</b> | <b>2005</b> | <b>2006</b> |
|---|-------------|-------------|-------------|-------------|-------------|-------------|
| Preparation of a handbook of methods and analytical techniques for the assessment of marine pollution in the north-east Pacific, based on the Reference Methods of the UNEP regional seas programme and preparation of a draft regional programme for the monitoring and surveillance of marine pollution |             |             |             |             |             |             |
| Meeting of experts to adopt a regional programme for the surveillance and monitoring of marine pollution by heavy metals, pesticides and petroleum hydrocarbons and pathogenic micro-organisms in the north-east Pacific  |             |             |             |             |             |             |
| Conduct of demonstration campaigns in critical areas  |             |             |             |             |             |             |
|   |             |             |             |             |             |             |
| <b>16. Regional programme for the identification, selection, study and recommendation for use of environmental sustainability indicators and environmental indices for the marine and coastal environment of the north-east Pacific</b>   |             |             |             |             |             |             |
|   |             |             |             |             |             |             |
| Seminar course on the use of environmental indicators applied to the marine and coastal environment of the north-east Pacific   |             |             |             |             |             |             |
| Seminar-workshop on the selection of biological indicators and selection of biological responses as environmental indicators for situations of environmental stress in the NEP  |             |             |             |             |             |             |
| Preparation of a handbook for the use and application of sustainability indicators in the north-east Pacific  |             |             |             |             |             |             |
| Meeting of experts to design and recommend a strategy for the national application of environmental indicators on the marine environment and coastal areas of the north-east Pacific, and their relations to national resource accounting and environmental accounting                                    |             |             |             |             |             |             |
| Design of a programme for the assessment and verification of the environmental indicators selected for the north-east Pacific   |             |             |             |             |             |             |
| Seminar workshop on the use and outcomes of the application of the environmental indicators of the marine and coastal environment of the north-east Pacific   |             |             |             |             |             |             |
| Handbook for the conduct of environmental auditing, using the environmental sustainability indicators of the marine environment and coastal areas of the north-east Pacific   |             |             |             |             |             |             |
|   |             |             |             |             |             |             |

| <b>Proposed activities</b>   | <b>2001</b> | <b>2002</b> | <b>2003</b> | <b>2004</b> | <b>2005</b> | <b>2006</b> |
|--|-------------|-------------|-------------|-------------|-------------|-------------|
| <b>17. Regional programme to support prevention and reduction of the impacts of natural disasters in the coastal and marine areas of the north-east Pacific</b>  |             |             |             |             |             |             |
|  |             |             |             |             |             |             |
| Workshop to select and recommend techniques and methods for assessing the impact of natural disasters on the coastal and marine ecosystems of the north-east Pacific   |             |             |             |             |             |             |
| Preparation and issuing of eight national maps of areas highly vulnerable to natural disasters, in particular, tsunamis of local origin, and of areas with special conditions conducive to landslides and the identification of coastal settlements situated in high risk areas or in areas vulnerable to the effects of ocean-atmosphere interaction phenomena, in particular storms, hurricanes and the El Niño Phenomenon |             |             |             |             |             |             |
| Preparation and calibration of computer models for tsunamis in especially vulnerable areas   |             |             |             |             |             |             |
| Meeting of experts to agree on and design a regional strategy geared towards supporting national plans for preventing and addressing natural disasters in highly vulnerable coastal and marine areas   |             |             |             |             |             |             |
| Regional course on the computer modelling of tsunamis  |             |             |             |             |             |             |
| Preparation of brochures, handbooks, guides and other information material   |             |             |             |             |             |             |
|  |             |             |             |             |             |             |

## Annex 2

# REGIONAL STRATEGY FOR THE IMPLEMENTATION OF THE PROGRAMME OF ACTIVITIES OF THE PLAN OF ACTION FOR THE PROTECTION AND SUSTAINABLE DEVELOPMENT OF THE MARINE AND COASTAL AREAS OF THE NORTH-EAST PACIFIC

## Introduction

The plan of action for the protection and sustainable development of the marine and coastal areas of the north-east Pacific provides an operational framework for a regional approach by country partnerships in the region in addressing shared problems caused by the deterioration of their marine, coastal and associated freshwater environment. It incorporates and applies the principles of sustainability and shares the same philosophy as the UNEP regional seas programme, of which it forms part. The plan in itself represents a strategic partnership by the region, whose aims are not an end in themselves, but are part and parcel of the results of all its components.

The present document is a strategy to set the plan in operation and it forms an integral part of the plan document. It has been prepared to facilitate the plan's implementation phase and the operational unfolding of its programmes, as concluded at the second session of the meeting of high-level government-designated experts for the proposed north-east Pacific regional seas programme, held in Managua, Nicaragua, from 19 to 23 March 2001.

## Objectives

To facilitate the preparation and operation of the plan of action and its operational programmes through the development of its components, bearing in mind the different options available to the institutional, financial and supporting machinery for the plan.

## Assumptions

The strategy is based on the following assumptions:

- Most of the environmental problems of the coastal and marine areas attested in the region are shared problems, and some are even of a global nature;
- There is a distinct political will to join efforts in a cooperative endeavour with a region-wide approach, to address these shared problems;
- There is an understanding of the importance that attaches to coastal and marine resources in the economic and social development of the countries of the region, to which sustainability principles need to be applied;
- There are differences between the capacities of different countries, both in using the coastal and marine ecosystems and in addressing the environmental problems of the coastal and marine areas of the region, which should be reduced until the capacities are the same;
- All the countries have the basic conditions on which to build or strengthen, as applicable, their national capacities to properly address problems relating to the assessment and management of the marine environment and coastal areas;
- In the region there is considerable accumulated experience in a variety of fields, reflected in national plans and programmes, which could contribute to the design of plans and programmes and other large-scale long-term regional measures focused on the shared problems of the marine, coastal and associated freshwater environment;
- There is a substantial legal framework, of both global and regional scope, applicable to the environment which offers a legal underpinning to specific measures and activities relevant to the objectives of the treaties and agreements in question that are conducted by the countries in the region which are parties. This framework can contribute to the objectives of the convention for the protection and sustainable development of the coastal and marine areas and, at the same time, can itself benefit from the conduct of joint, wide-scale and long-term

measures, plans and projects agreed upon for the purpose of setting the plan in operation. It is also recognized that there are international programmes in various fields which involve the participation of one or more countries of the region and include activities with the potential to contribute to and strengthen common regional wide-scale and long-term measures for the protection and sustainable development of the coastal and marine areas and associated freshwater environment of the north-east Pacific region;

- There is recognition of the benefit accruing to the regional plan of action from the formation of strategic partnerships with other international organizations, both within and outside the United Nations, whose agendas could concur with one or more objectives of the regional plan of action and whose support would be highly advantageous for the development of the programmes. At the same time, it is recognized that there are third countries with a possible interest in the programmes under the plan which offer considerable potential for strengthening cooperation and the necessary assistance;
- It is known that the scale and extent of the shared regional environmental problems of the marine environment and coastal areas of the north-east Pacific vary from country to country, and this, in combination with their different capacities, necessitates the gradual and prioritized development of the programmes;
- It is also recognized that there is a need to invest economic resources in the conduct of long-term, region-wide measures for protection and sustainable development in the marine and coastal environment of the region and that there are external funding mechanisms and sources which could provide financial support for the development of the plan on the basis of the preparation of joint proposed projects, agreed and formulated in the light of those funding sources and mechanisms and endorsed by the Governments of the north-east Pacific region.

### **Strategic elements**

The strategic elements are in line with the institutional, legal, financial, programmatic and coordination arrangements of the plan.

**Institutional elements :** These include the different types of national institutions participating in the various programmes and activities under the plan. The following types of institutions may be identified:

- Government institutions which have a specific mandate to conduct studies and research into the marine and coastal environment, including fishing;
- Government institutions which have a specific mandate for the administration and management of the coastal and marine areas of the region and of their use;
- Government institutions with a mandate and objectives other than the protection and management of the marine and coastal environment but whose plans and/or activities concur with one or more of the programmes under the plan, including universities;
- Non-governmental, private and other organizations with an interest in the plan.

**Legal elements:** These include the international legal framework, which is both global and regional in its extent, signed and ratified by the Governments of the region and now in force, in the field of the environment, and described in annex III to the present plan document.

**Financial elements:** These include the various possible funding sources for agreed projects and/or activities of regional interest which require financial support, such as :

- Trust fund for the north-east Pacific;
- "Voluntary" extrabudgetary contributions from the countries participating in the plan;
- Contributions from the United Nations Environment Programme;
- Contributions from other bodies of the United Nations system and other international organizations, such as OAS, JICA, SIDA, CIDA, DANIDA and others;

- International financial institutions: Global Environment Facility, World Bank, Inter-American Development Bank, Central American Development Bank, and others;
- Voluntary contributions from the private sector.

**Programme elements:** These include international and national programmes currently in progress:

Global Ocean Observing System (GOOS) (as part of the Integrated Global Observing Strategy IGOS);

- Global Coral Reef Monitoring Network (GCRMN);
- Tropical atmosphere-ocean (TAO) array project;
- Harmful algal blooms (HAB) programme;
- International Mussel Watch Programme;
- Marine Pollution Monitoring Programme (MARPOLMON);
- Global Programme of Action for the Protection of the Marine Environment, coastal areas and associated freshwater systems from Land-based Sources;
- International Geosphere-Biosphere Programme (Land-ocean interactions in the coastal zone (LOICZ) project;
- International Tsunami Warning System (ITSU);
- Global Investigation of Pollution in the Marine Environment (GIPME);
- El Niño Southern Oscillation (ENSO);
- Jakarta Mandate on the Conservation and Sustainable Use of Marine and Coastal Biological Diversity, adopted in the framework of the Convention on Biological Diversity;
- The work of the Intergovernmental Panel on Climate Change (IPCC), in particular its work on the effects of atmospheric warming on the marine and coastal environment;
- The work of the United Nations Framework Convention on Climate Change related to environmental impact assessments and CO<sub>2</sub> sinks;
- The Action Plan for the Wider Caribbean region and the Action Plan for the Protection of the Marine Environment and Coastal Areas of the south-east Pacific.

**Coordination elements:** These include the national coordination and integration systems: the national networks for programme implementation, national science and technology councils, national environmental commissions, etc., and such international agencies as PAHO/WHO, ECLAC, IOC, FAO, IMO, AIEA, UN-DOALOS, WMO, etc.

### Operation of the strategy

Given the differences in the institutional capacities and the training needs that certain programmes will present, as well as the need to ensure the good quality of the information resulting from the research, the assessment component of the plan will commence with a gradual and basic assessment programme focused on the programmes identified as priorities. This programme will require:

- Design of a coordinated pollution assessment programme, identifying areas of regional interest, the pollutants to be assessed and the principal sources of pollution (inventories), for which purpose account must be taken of the regional analysis, the national reports and other sources indicated in annex IV to the present strategy;
- In designing this programme account must be taken, among other things, of plans, projects and programmes already carried out or still in progress relevant to the various areas and to pollutants, the international and national organizations involved in these plans and the aims of prior studies and investigations, with a view to seeking complementarities, where relevant, and avoiding duplication of effort;
- Identification of the institutions (laboratories) with the analytical capability and equipment to make the determinations required and to conduct the sampling programme. The institutions may be identified through information contained in the proposed regional directory of research centres and institutions of the north-east Pacific and/or through information provided by the national coordinating centres. These information sources offer a range of

institutional options for conducting the operational component of the plan. In principle, it would be preferable to secure the participation of those institutions and/or laboratories which have the necessary capacity and which include research and/or monitoring activities in their day-to-day work. It is hoped that, initially, at least one laboratory per country will participate in the field activities. In principle, it is desirable that the determinations be made by laboratories of government institutions, preferably with the participation of university laboratories and research centres. This will help ensure wider benefits from the research and a stronger commitment by institutions to the plan and the strengthening of institutional capacity; in any event, decisions about the number and nature of institutions participating in the plan will always be the responsibility of the Governments;

- Adoption of analytical techniques and methods and joint analytical protocols. There are a number of analytical methods and techniques which are widely used with their respective protocols, most of them dealing primarily with freshwater pollution. The plans of action of the UNEP regional seas programme generally use the Reference Methods for Marine Pollution Studies prepared by IAEA and other specialized agencies of the United Nations system. This is a necessary condition for ensuring the replicability and comparability of the results and the incorporation of the information into the global marine pollution monitoring networks and programmes;
- Design and implementation of calibration and comparison exercises and an agreement on formats and reports. These exercises should, in principle, involve the participation of laboratories and institutions with more extensive experience and greater capacity, in particular those which conduct pollution studies, and they should be those which have decided to adopt the use of uniform techniques and methods. In their turn, they should intercalibrate their work with other laboratories in each country, so that a larger number of institutions become involved in work under the plan;
- Use of analytical standards and reference materials with agreement on areas, sampling intervals and pollutants of regional interest. The basic studies are, by definition, rapid studies the purpose of which is to obtain a quick and clear picture of the situation, so as to confirm information already available and yielding results which can be used in the design of monitoring and surveillance programmes and which form the basis for the plan's management component. For this reason, the sampling carried out in the basic studies should not be so repetitive as to turn into a routine exercise. Its results shall, in addition, indicate where more intensified research is needed. The analytical standards and reference samples, and also the necessary technical assistance, may be obtained under cooperation agreements to be signed between the regional coordinating unit and international organizations, including in particular the IAEA-MEL Marine Environment Laboratory in Monaco and the Intergovernmental Oceanographic Commission (IOC) of UNESCO;
- The principal component of the plan's assessment phase will mainly comprise the strengthening of institutional capacity, the formation of the institutional networks, the setting up of ad hoc groups on special issues, the design of specific projects to be submitted to funding sources, the establishment of coordination mechanisms, the strengthening of international cooperation and the complementarity of the convention (development of the legislative component). The strengthening of institutional capacity is focused initially on extensive training efforts, for which various options may be considered:
  - (i) Existing courses in the university institutions and/or laboratories and centres in the region;
  - (ii) Existing courses in the laboratories and international centres of specialized international bodies and/or in universities outside the region;
  - (iii) Courses which need to be tailor-made and which are not included among those in (i) and (ii) above;
  - (iv) Courses offered in other regional programmes with a similar profile and which experts from the region could attend, such as those of the action plan for the wider Caribbean, the action plan for the south-east Pacific and the action plan for the upper north-west Atlantic;



- (v) Seminars, workshops and working groups outside the programme which the region is invited to attend and/or in which the attendance and participation of experts from the region is considered useful.

In the first instance courses are needed in the following subjects: use of analytical techniques for the identification of oils and hydrocarbons in sea water, sediments and marine organisms; course on the use of analytical techniques for the identification of heavy metals, pesticides in marine organisms, sea water and sediments; course on the use of microbiological techniques to assess the effect of pollution in water, on beaches and in marine organisms ( $T_{90}$ ); course on the use of rapid assessment formulae for water, air and soil pollution; course on the use of techniques and methods to assess the effect of pollution on marine organisms (bioassays and toxicity tests) and toxicity of sediments; course on the development of coastal water quality criteria; course on the use of computer models on tsunamis; course on the use of material and equipment in controlling oil pollution from accidental spills and analysis of the vulnerability of coasts, etc. Participants in the courses will serve to disseminate the knowledge acquired inside their own countries and/or their institutions will endeavour to replicate these courses at the domestic level with the assistance of most of the institutions concerned. All the courses are specialized and of short duration and will be provided with the appropriate handbooks and relevant information. There is a wide range of options for technical assistance in the design and conduct of these courses, including the IAEA Marine Environment Laboratory in Monaco, FAO, the TEMA programme of IOC, IMO, USEPA, PAHO/WHO, and other international organizations which support the plan of action for the north-east Pacific;

- Coordination of the plan in principle follows the same pattern as the other regional action plans and is set forth in the plan document. The regional coordinating unit will maintain close liaison with the international agencies supporting the plan of action and, for that purpose, may conclude memoranda of understanding and cooperation. Given that the national agencies and/or units for contact with these organizations may not be the same as those of the plan of action, countries will take the necessary steps to ensure that their representatives and/or heads of delegation at the intergovernmental meetings and/or governing boards of these organizations duly reflect in their briefs and/or statements the agreements and requests for support agreed to at meetings of the general authority and/or intergovernmental meetings for the plan of action. In turn, it is highly desirable that the national coordinating centres ensure that their experts attend the various meetings under the plan and its reports, without prejudice to the report required of the institution in which the expert is working. This is necessary in order to build institutional memory of the plan in each country and to facilitate the task of following its development. In the event that any handbooks, guides, reports, papers, etc., are to be distributed, the plan's regional coordinating unit, through the networks of institutions, will forward them to the national coordinating centres for distribution to the information centres (libraries) and experts participating in the plan of action;
  - (i) Given the range of topics which the plan will gradually develop, the regional coordinating unit, in the context of the technical assistance required for the purpose, the limited financial resources and the necessary coordination, will be able to set up advisory mechanisms and technical consultation arrangements, for which a number of options are available:
  - (ii) To use the voluntary experts programme, the costs of which are covered directly by the expert's country of origin;
  - (iii) To seek technical assistance in a specific area from a specialized agency in the United Nations system on the basis of cooperation agreements to be signed, including assistance from UNEP;
  - (iv) To form temporary ad hoc groups of experts from the region, which would have a specific mandate and would meet occasionally when circumstances render such meetings necessary and would act in their capacity as experts. Most of their work would be accomplished by correspondence, with the maximum use of e-mail. This would be without prejudice to the establishment of the advisory group

provided for under the plan, which shall have the specific function of considering the technical component of the plan in toto;

- Within the countries, responsibility for the overall coordination of the plan and its programmes rests with the national coordinating centres, in line with the plan's institutional arrangements, and their designation is one of the first tasks to be performed in the plan's implementation phase. Before launching the operational phase of the plan, it is essential that Governments designate their national coordinating centres, for which there are various options:
  - (i) Using the coordination arrangements relating to environmental issues already existing in the region ;
  - (ii) Designating ministries and/or offices dealing with the issue of management of the marine and coastal environment;
  - (iii) Designating environment ministries and/or existing environmental commissions;
  - (iv) Another type of institution relevant to this issue.

In any event, designation of the bodies will always be the responsibility of Governments. Experience shows that, in cooperative programmes, the work of coordination should not be entrusted to institutions operating the programmes at the national level. In this way, broader institutional participation is ensured and the concentration of activities in a single institution or group of institutions avoided. In general, given the political, legal and financial issues addressed by the plan of action, it is desirable, without prejudice to the possible views of Governments on this matter, that the national coordinating centres should report to the countries' ministries of foreign affairs. Whatever the case, the regional coordinating unit will prepare guidelines to facilitate the coordination work under the plan for the national coordinating centres;

- Regional coordinating units will be able to form an institutional group comprising public and private entities with an interest in participating in the plan of action and/or its activities, given that the plans and programmes provide for participation at different levels, in accordance with interests and institutional capacities and the needs of given programmes. Some institutions will be full participants, these being institutions entrusted with operating the various programmes (sampling and determinations and inventories), and others will be partial participants, involved in one or more activities, such as courses, specific assessments, etc. It is important that the plan should be developed in a stepwise manner, ensuring that there are opportunities for other institutions to participate in its development. It is not advisable for a single institution to have charge of developing the entire operational programme of the plan within a given country, but it is important to secure the involvement of institutions with the most extensive experience and capacity. The regional coordinating unit may, if deemed necessary, establish specific units for consultation and technical assistance, comprising the most representative institutions and those with experience in marine environmental research and management and with the private involvement of the sectors with a strong interest in the sea, ports, fisheries, tourism, urban development, etc.;
- Generally speaking, the regional plans of action deal with various types of instruments in their work, which have a variety of purposes and levels of significance. The ordinary meetings and intergovernmental meetings produce proceedings and the outcomes of these meetings are decisions, implementation of which is mandatory. The outcomes of the meetings of the advisory group are recorded in the report of the meeting and take the form of recommendations which are not mandatory. Both the intergovernmental meetings and those of the advisory group and ad hoc groups have recourse to background documents illustrating the full range of topics on the agenda of those meetings and these have the status of information documents, which may come from different sources. A major source of such documents is the agencies of the United Nations system, other regional programmes, non-governmental organizations such as IUCN, etc. The draft versions of such documents as technical reports, handbooks, guidelines, etc., are subject to revision and have the status of working papers, which status they maintain until they are adopted by the intergovernmental meetings. The documents of seminars, conferences and other comparable forums take the form of reports and have the status of consultation and information documents. Other

documents [are] produced by the plan outside the programme [and], by virtue of their content and significance for the purposes of the plan, are issued as occasional papers and may be used as information documents for the plan's activities, as decided by the regional coordinating unit. The plan may have its own information service, as decided by the general authority and, in any event, the publication, editing and dissemination of the plan's documentation will be the responsibility of the regional coordinating unit;

- Once the convention has been adopted, the plan will constitute the regional mechanism to facilitate its implementation and support Governments in complying with the obligations that they have entered into. It is also necessary that countries begin their ratification processes. As a framework document, the convention will need to be further developed and supplemented. For the purpose of considering legal issues and interlinkages in its application with other conventions and for the development of other supplementary instruments, the regional coordinating unit will be able to establish an ad hoc advisory group on legal matters, made up of distinguished jurists from the countries designated by the Governments on the invitation of the unit, and the group's reports and recommendations will be communicated to the intergovernmental meetings (meetings of the parties). Each new supplementary instrument must be preceded by a comparative study of national regulations relevant to the new instrument in order to facilitate efforts by the countries to harmonize their national regulations and ensure full synergy between the new instrument and those regulations. A decision must also be reached on the manner in which the plan is to support the implementation and applicability of the new instrument and the identification of new activities which might be required to facilitate its application, in order to suggest additions and supplements to activities under the plan. Any new exercise to prepare a regional legal instrument related to the convention or other instruments on the subject of protection of the marine environment must be accompanied by a consultation process which uses the plan of action as its platform and strategy;
- In developing the management programmes, due account must be taken of any complementarity which they might have with relevant international programmes already in progress, so that potential mutual benefits can be identified, both in the programme itself and/or in its components. Similar considerations apply to the potential inherent in national programmes, in particular those based on sustainability principles in which sectoral and institutional integration are of importance. In general, these provide useful guidance in ways of applying lessons learned and of incorporating these in the management programmes;
- It is clear that both the assessment phase, including the basic studies, [and] maintenance of the monitoring programme and the management programmes may demand more than the financial resources available to the plan. Contributions by Governments may not be sufficient to cover the plan's needs. This possibility is the strongest argument in support of a stepwise approach to developing the plan and, for that reason and as an alternative to efforts to secure extrabudgetary and additional funding, a projects bank should be set up under the plan, centred on those programmes which have been identified as indispensable for the region and which can count on the full backing and support of the Governments. It is also important to secure linkages between third States and the plan and/or its activities, which might provide financial support for the plan, and to seek the support of other organizations, such as OAS and international agencies.

### **Annex 3**

#### **Relevant international conventions**

1. United Nations Convention on the Law of the Sea (1982)
2. International Convention for the Prevention of Pollution of the Sea by Oil, London, 1954 (as amended on 11 April 1962 and 21 October 1969)
3. International Convention for the Prevention of Pollution from Ships (London, 1973)
4. International Convention on Civil Liability for Oil Pollution Damage (as amended) (Brussels, 1969)
5. Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal (Basel, 1989)
6. Global Programme of Action for the Protection of the Marine Environment from Land-based Activities (Washington DC, October 1995)
7. United Nations Framework Convention on Climate Change (1992)
8. Convention on Biological Diversity (1992)
9. Convention on International Trade in Endangered Species of Wild Fauna and Flora (Washington DC, 1973)
10. Convention on Wetlands of International Importance, especially as Waterfowl Habitat, (Ramsar, 1971)
11. Protocol to Amend the Convention on Wetlands of International Importance, Especially as Waterfowl Habitat (Paris, 1982)
12. International Coral Reef Initiative
13. Marine Mammal Action Plan
14. Convention on Nature Protection and Wildlife Preservation in the Western Hemisphere (Washington DC, 1940)
15. Convention for the Protection and Development of the Marine Environment of the Wider Caribbean Region (Cartagena de Indias, 1983)
16. Protocol Concerning Cooperation in Combating Oil Spills in the Wider Caribbean Region (Cartagena de Indias, 1983)

17. Protocol Concerning Specially Protected Areas and Wildlife to the Convention for the Protection and Development of the Marine Environment of the Wider Caribbean Region (Kingston, 1990)
18. Convention for the Protection of the Marine Environment and Coastal Area of the South-East Pacific (Lima, 1981)
19. Agreement on Regional Cooperation in Combating Pollution of the South-East Pacific by Hydrocarbons or Other Harmful Substances in Cases of Emergency (Lima, 1981)
20. Supplementary Protocol to the Agreement on Regional Cooperation in Combating Pollution of the South-East Pacific by Hydrocarbons and Other Harmful Substances (Quito, 1983)
21. Protocol for the Protection of the South-East Pacific Against Pollution from Land-based Sources (Quito, 1983)
22. Protocol for the Conservation and Management of the Protected Marine and Coastal Areas of the South-East Pacific (Paipa, 1989)
23. Protocol for the Protection of the South-East Pacific Against Radioactive Contamination (Paipa, 1989)
24. Protocol on the Programme for the Regional Study on the El Niño Phenomenon (ERFEN) in the South-East Pacific (Callao, Peru, 1992)
25. Central American Alliance for Sustainable Development
26. Central American Convention on Biodiversity (Managua, 1992)
27. Central American Convention for the Protection of the Environment (San José, 1989)
28. Regional Agreement on Transboundary Movements of Hazardous Wastes (Panama City, 1992).

## Annex 4

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